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THE SURGICAL TREATMENT OF EXOPHTHALMIC GOITER*

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No clinical entity is better known as regards symptoms, diagnosis, treatment and prognosis than exophthalmic goiter, despite the fact that its etiology continues to be in question. That it is a disease of the thyroid gland associated with an unknown stimulus which results in the production and delivery to the tissues of an abnormal thyroid secretion and, perhaps, at the same time, an excessive amount of normal thyroxine, is the hypothesis of H. S. Plummer. That the disease progresses usually by exacerbations and remissions, with an occasional tendency to cease spontaneously after running a course of a few months to many years in certain cases, is well known, and the standardization of phenomena which are associated with this state, namely exophthalmos, stare with or without exophthalmos, gastro-intestinal crisis, vomiting and diarrhea, a psychic state characterized by irritability and useless, purposeless motions, loss of weight, and increased metabolism, likewise is recognized.

The hyperfunctioning adenomatous goiter presents those phenomena symptomatically which are the direct result of increased metabolism and may be reproduced by feeding quantities of desiccated thyroid or thyroid extract. The absence of adenomas in the hyperfunctioning gland, from a practical standpoint, is presumptive evidence of exophthalmic goiter. However, in about one case in five, adenomas are present in the gland in exophthalmic goiter, so their presence or absence is not absolute evidence of the type of hyperthyroidism under consideration. Bruits over the superior thyroid vessels are almost always present in well established exophthalmic goiter but they must be differentiated from the sounds produced by lesions of the aortic valve, bruits due to arterial compression and to colloid adenomatous goiters seen in adolescent persons. Characteristic changes in finger nails and toe nails occurring in cases of exophthalmic goiter frequently are of diagnostic value. The nails are often partly and irregularly separated from the nail-bed, with occasional turning up of the outer edge. It is essential to differentiate exophthalmic goiter and hyperfunctioning adenomatous goiter because of the difference in pathologic features and in prognosis, as well as in the selection of time for resection. If we adhere dogmatically to the hypothesis that there are two products of thyroid secretion in exophthalmic goiter, it is essential to administer adequate amounts of iodine in the preoperative treatment, while the reverse is true in hyperfunctioning adenomas. Practical considerations, however, demand that we adhere not too rigidly to this dictum and it has been customary in The Mayo Clinic to use small doses of iodine as a differential determining factor in establishing a mooted diagnosis. The small amount used has no ill effect and lack of improvement in the presence of adenomas contraindicates its continued use. Further, in the differentiation of these two conditions, the element of time, with gradual progression in adenomatous goiter, and exacerbation and remission in exophthalmic goiter, are factors to be considered in the diagnosis. Diarrhea, vomiting and other evidences of a gastro-intestinal crisis are present in exophthalmic goiter and usually absent in adenomatous goiter. The visceral degenerative changes in adenomatous goiter which extend over long periods of time are of extreme importance from the prognostic standpoint, and frequently myocardial disturbances are the first evidence of accumulated products of hyperthyroidism. Differential diagnosis of toxic goiter, neurosis, neurasthenia, chronic nervous exhaustion, and so forth, frequently is difficult and always essential. Many cases of exophthalmic goi-

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ter which are associated with neurosis, and border-line cases, present great difficulties of differentiation. Determination of the basal metabolic rate is of enormous assistance in solving this problem but frequently in neurotic patients several estimations are needed in order for them to relax sufficiently to permit a satisfactory estimation to be made. It is not uncommon in some of these cases to find a rate which varies greatly and demands successive trials over several days to establish a dependable figure. Response to iodine in this group produces the characteristic changes in the nervous symptoms, a drop in the basal metabolic rate, and an increase in the patient's weight.

The surgical treatment of exophthalmic goiter has been forwarded by Halsted, C. H. Mayo and Crile in this country, and particularly by Kocher, and de Quervain abroad. These surgeons have standardized operative maneuvers, but it remained for Plummer, following the research work of Kendall, Marine and others, to standardize the preoperative treatment by the adequate use of iodine with a resultant decrease in mortality and morbidity. .

Baumann, in 1896, discovered iodine as a normal constituent of the thyroid gland, and later, with his co-workers, Oswald and Roos, demonstrated that (1) ingested iodine is stored in the thyroid glands of animals; (2) after the removal of iodine from the diet, compensatory hypertrophy from the thyroid gland occurs; (3) the iodine content of the thyroid gland is directly proportional to the amount of colloid and (4) in colloid goiter the percentage of iodine is relatively less than that in a normal thyroid gland.

In 1914, Kendall isolated thyroxine as a pure chemical compound. Its physiologic and chemical properties indicate that it is employed in the process of oxidation as a catalytic agent and also support the hypothesis that thyroxine is active in all or nearly all of the cells of the body. The amount of thyroxine present in the tissues of the average adult man is 14 mg., and the thyroid gland delivers approximately 0.33 mg. to the tissues daily; however, this amount varies with the metabolic activity. That the production of thyroxine is the function of the thyroid gland is the most acceptable hypothesis of its activity, although, unquestionably, it has many other related functions and probably also many unknown ones.

The action of the compound solution of iodine (Lugol's solution) on the thyroid gland is quite characteristic from the standpoint of the gross and microscopic changes in the gland, as well as from the standpoint of abatement of clinical symptoms. Prior to its use as a preoperative, preparatory agent, active exophthalmic goiters were vascular, bloody, friable and difficult to remove in many instances, depending on the size of the gland, the length of time the process had been present, and the amount of undermining which the general resistance of the patient had undergone. Adequate systematic and continued iodinization prior to resection of the thyroid gland reduces this state to one closely approximating that of diffuse colloid goiter. The changes in the various elements of the gland are constant and characteristic. A study of the microscopic changes in the gland following resection, after iodinization, may be summarized consistently from the work of Sager, Rienhoff, and others, as follows: (1) increase in colloid material; (2) increase in the element of connective tissue of the gland; (3) decrease in vascularity; (4) increase in size and regularity of the acini; (5) decrease in the height of the epithelium; (6) decrease in the cytoplasmic bodies of the epithelial cells, and (7) decrease in mitosis and lymphocytic infiltration. Grossly, the iodinized thyroid gland at operation appears reddish, lobulated and meaty, in marked contradistinction to the active friable goiter of a decade ago that was so difficult to handle.

Plummer began to standardize preparation of these patients for operation in 1922, placing the patients with toxic goiters, as a group, under the management of clinician, surgeon and pathologist. The three essential factors for satisfactory management of these patients are iodine, rest, and a high calorie diet. As the patient with exophthalmic goiter appears for treatment at an earlier stage of the disease it is found less and less essential to adhere rigidly to hospitalization as a routine for a period of preliminary treatment. On the other hand, ambulatory treatment over a short period of time, under careful observation of clinician and surgeon, is proving satisfactory except in the small group of extremely toxic cases, or for those patients who are approaching or recovering from a hyperthyroid crisis. Obviously, these tremendously sick patients demand hospitalization and special attention. Compound

solution of iodine is given up to the time of operation. Its administration consists of 10 minims by mouth three times daily in cases of moderate severity. This arbitrary dose varies with the severity of hyperthyroidism, and the patients who are approaching a crisis or who are in crisis may be given huge doses with eminently satisfactory results. In severely toxic cases, in which vomiting is present, proctoclysis may be the method of choice for the administration of iodine, although usually the drug may be given by mouth and retained after repeated endeavors.

Clinical evidences of improvement, such as lowered basal metabolic rate, decreased nervous phenomena, and increase in body weight and strength, indicate that the opportunity for undertaking resection is at hand. Treatment for a period of one week to ten days is sufficient in the average or moderately severe case to place the patient in a physiologic state compatible with surgical intervention. The striking response to this preliminary treatment is indicated by (1) huge reduction in operative mortality; (2) the practical abandonment of preliminary ligations and other graded procedures, and (3) absolute control of postoperative hyperthyroid crisis. The abandonment of preliminary ligations and graded maneuvers, such as lobectomy or injections of hot water, has decreased mortality and morbidity and has resulted in practically all operations of thyroidectomy being accomplished in one stage. Formerly a high percentage of these patients, probably more than a third, were operated on by graded surgical procedures, such as single or double ligations or lobectomy. The rule of the last decade prior to the use of Lugol's in the case of highly toxic exophthalmic goiter, was to do a preliminary ligation of the right superior thyroid pole and if this was not followed by a sharp reaction, to do a subtotal thyroidectomy seven days later. If, however, the reaction was marked, another ligation was done at the end of seven days and after a short period of hospitalization the patient was allowed to return home for a wait of three months before returning for further surgical procedures. This rest, wait and double ligation usually resulted in a gain of about 19 pounds in weight and a marked increase in general resistance. The thyroidectomy, however, was rendered more difficult technically, and the mortality remained much higher than the mortality of today, after preliminary treatment by iodine. The only indications for operations in multiple stages which I now recognize are: (1) high risks which are the result of long-standing hyperthyroidism or general constitutional ailments; (2) some local cause, such as tracheal deformity or obstruction, and (3) some technical accident, such as hemorrhage, injury to a nerve, or sudden change in the patient's condition which has developed at operation and necessitated its abandonment, and which has lowered the threshold of surgical safety.

Control of postoperative hyperthyroidism is one of the most satisfactory accomplishments of Plummer's plan of iodinization. In 1927, not one of the eleven deaths in The Mayo Clinic from exophthalmic goiter was attributable to an acute, postoperative thyroid crisis, which formerly was a common occompaniment of thyroidectomy. High temperature, thready, rapid pulse, with some nausea and constitutional reaction occasionally are seen after operation, but they are of short duration, unaccompanied by any of the characteristic phenomena of postoperative hyperthyroidism, and at the end of twelve to twenty-four hours usually have disappeared and the normal type of postoperative convalescence has been established.

The steps of the operative procedure are well known to all surgeons and I shall not describe them in detail. Our preference at The Mayo Clinic has been subtotal thyroidectomy, removing portions of both lobes and the isthmus, and leaving an adequate amount of tissue around the posterolateral surfaces of the gland to avoid injury to the recurrent laryngeal nerve, and at the same time to preserve adequate function of the thyroid gland. The five important steps in thyroidectomy are: (1) avoidance of injury to the recurrent laryngeal nerve; (2) accurate and complete hemostasis; (3) removal of sufficient thyroid tissue to relieve the hyperthyroid state; preservation of the function of the parathyroid gland, and (5) a satisfactory cosmetic result. The satisfactory cosmetic incision is one straight across the neck as the patient lies with neck extended, from one anterior jugular vein to the other. The skin flap is raised without taking the platysma with it. The platysma and underlying muscles are separated longitudinally and retracted laterally to give exposure. I have not found it necessary, unless the thyroid gland is very large, to divide the prethyroid muscles in order to obtain adequate

exposure; yet, I have no quarrel with anyone who carries out this procedure as a routine, since it is impossible to tell, at the end of a week or two, whether or not the patient has had the muscle cut, unless one refers to the record. The sternothyroid muscle is divided as a single separate step and, as the gland is located through it the lobe is caught with the Lahey forceps and elevated and rotated mesially. The sternothyroid muscle is dissected free and the lateral surface of the gland is exposed, so that the lateral veins may be ligated separately. This permits elevation of the lobe on a finger, which may serve as a control for oozing during the subsequent steps of the lobectomy and, at the same time, may prevent injury to the recurrent laryngeal nerve. The lobe is removed from above downward, and from within outward; the dissection is kept above the trachea at all times. The superior thyroid vessels are caught with two clamps and the upper pole is severed. The suspensory ligament is now caught and divided, and the isthmus is divided between clamps, exposing the trachea. At the same time the inner anastomotic branches of the inferior thyroid vessels are exposed and ligated. The dissection is carried down to the lower pole and then forward, across the gland to its outer side, where the other branches of the inferior thyroid artery are secured. In removal of the right lobe, adequate glandular tissue is taken away, leaving a V-shaped segment. It is my practice to tie the larger vessels with free-hand ligatures and then to suture the surfaces together with a running suture from above downward. After this single lobectomy has been accomplished and hemostasis has been completed, I think it highly desirable that the patient be permitted to wake up and cough in order that the nervous function may be determined at this time of the operation. In this connection it might be emphasized that selection of a satisfactory and proper anesthetic is a most important duty of the surgeon. Although every goiter may and can be removed under local anesthesia without pain to the patient, it is my conviction that a great deal of fear and anxiety, which is a common accompaniment of all surgical procedures, is avoided by the employment of small but adequate amounts of gas or ethylene anesthesia. This tides the patient over the difficult parts of the operation, and is, I believe, highly desirable from the standpoint of both operator and patient. My own choice is ethylene anesthesia, which I employ at the beginning of the operation, until the injection of the local anesthetic in the neck is accomplished. Then the anesthesia by inhalation is discontinued and by the time the patient is awake the flap has been raised, the gland mobilized, and the resection completed, so that it is possible to complete the ligation of the blood vessels without pain and without using more anesthesia by inhalation. The second lobe may be removed in a like manner, after infiltration of the lobe with procaine or the employment of another small amount of gas. The completion of the operation is always possible without additional anesthesia with gas and it can be done in comfort if the preliminary injection of the tissues of the neck has been properly accomplished.

I do not attempt to close the wound of thyroidectomy without drainage; closure without drainage frequently is a successful step, but I believe that the employment of a drain as a routine lateral to the median line of the neck, is more satisfactory, and in my cases I have found no reason to discontinue this practice. A small stab wound through the right, ribbon-like muscles, lateral to the median line of the neck, is used for the insertion of two strips of rubber tissue into the fossae from which the gland has been removed. This obviates adherence to the trachea of a scar which moves up and down on swallowing and which is a source of no little annoyance to any patient unfortunate enough to have it occur.

It is my custom to dismiss these patients from the hospital on about the fifth day after operation, with directions to remain in their hotels for two weeks until the wound is completely healed. On dismissal they are instructed to continue taking iodine in doses of 10 minims for a period of ninety days from the date of operation.

ROENTGEN RAY TREATMENT OF EXOPHTHALMIC GOITER*

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My results in the treatment of goiter with X-ray have been so satisfactory that I am almost persuaded to join the ranks of the enthusiastic radiologists who claim the disease properly belongs to the medical

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section and is rarely, if ever, a surgical proposition.

This position, however, is, I think, as equally erroneous as the assumption of the surgeon, who, with a personal sense of professional intellectual superiority arrogantly contends that X-ray is of no value in any type of goiter, which conclusion he has arrived at because forsooth, he has tried it in one or two cases, probably colloids, and failed. The truth, no doubt lies midway between these two opinions.

It is, of course, essential to distinguish between the different types of goiter. The X-ray has no effect whatever on the colloid type which, by the way, is the only kind where iodine should be used as a curative measure. The non-toxic adenoma and the toxic adenoma, are probably best treated by surgical measures, however, in the series of cases treated in the Massachusetts General Hospital, four toxic adenoma cases refused surgical intervention and were treated by X-ray with satisfactory results. It is the more serious type of goiter (the exophthalmic) wherein the X-ray is most valuable as a therapeutic measure.

It is the general practitioner who sees these patients first and who must make the diagnosis and assume the responsibility of selecting for his patient a surgeon or a radiologist.

I propose to submit, so far as time assigned will permit, the claims of radiology in this disease.

We cannot deny that surgical treatment has been both remarkable and brilliant, and, because of this, X-ray therapy has been very slow in obtaining that recognition to which it is entitled.

During the past ten or fifteen years rather extensive studies have been made of Roentgen Ray therapy and while I shall not attempt a survey of all the literature, I do wish to call your attention to the work done in the Massachusetts General Hospital reported by Doctors G. W. Holmes and Edward P. Richardson.

This study was under the supervision of the surgeon, internist and radiologist, and was undertaken for the purpose of arriving at an unbiased conclusion as to the proper evaluation of irradiation in this disease.

The observations were made on 369 cases, checked with frequent basal metabolic tests indicative of the amount of intoxication.

The results obtained were such as to justify the continuation of this form of treatment, particularly in those cases characterized by rapid heart action, nervousness, exophthalmus, increased metabolic rate, loss of weight and weakness, in other words, typical exophthalmic goiter.

Dr. Kennon Dunham of Cincinnati, said: "My opinion is based on twenty-two consecutive years' use of this procedure. In my hands and in the hands of my associates, it has given results which are nothing short of marvelous. I consider X-ray therapy the treatment of choice."

Bertram J. Sanger, Department of Medicine, Columbia University, reports a careful study of fifty patients treated with X-ray. 82 percent became entirely well and remained so, 6 percent were improved, 8 percent were operated upon, and 4 percent were lost in the follow-up clinic. Dr. Edward L. Jenkins, Illinois Medical Journal, January, 1927, says, "The biological effects together with definite clinical evidence of amelioration justifies the employment of X-ray in Graves disease. In the one hundred cases treated only two returned for treatment after being discharged as cured.

These results, which generally agree with those reported from various sections of the country, certainly compare very favorably with those obtained by surgical methods. Judd, from the Mayo Clinic, in "American Surgery" 1920, reports on 100 cases in which operation was performed. The results showed 65.8 cured, 13.6 markedly improved, 5.6 slightly improved, and 15 percent of the patients dead from all causes. When you consider X-ray therapy has no mortality, it would seem obvious that it is the treatment of choice. It is true that the death rate in the best selected three or four surgical centers is low—1.77 percent, and yet for the individual concerned it is 100 percent. Manifestly, all cannot avail themselves of these expert centers and therefore must, if surgery is to be used, be placed in the care of the general surgeon and while statistics are not available, it is estimated the general mortality under these conditions is not less than 10 percent, and inasmuch as one of our leading hospitals in the East report 7.1 percent, it would seem the estimate of 10 percent throughout the entire country is fairly conservative.

This fact of a definite mortality and the further fact that some cases are inoperable,

and in others operation is refused, has lead internists more and more to the use of the X-ray.

Both procedures have the same object in view. The surgeon removes the gland, or portions of it, and thus does away with hyperfunction and here the surgeon must use good judgment, for if he removes too much, we have the case changed into a myxoedema which is, at least, no improvement, while if he removed too little, there is a regeneration of the pathological cells and the patients continue with their toxic symptoms. The well known biological effects of the rays on glandular tissue producing degenerative changes in the epithelial lining of the vesicle and also an associated fibrosis of the connective tissue, making it smaller and harder, together with its effects in causing contraction of capilaries and blood vessels by an obliterating endarteritis reduces the vascularity, all of which inhibits the excessive secretion and reduces the quantity of thyroxin thrown into the circulation.

Thus is established the normal function of the gland and restoration to health of the patient. Of course, we do not expect to restore a damaged heart by radiation, however, patients frequently delay accepting operation, which delay results in cardiac injury when they would readily have submitted to irradiation, which is a big factor in favor of X-ray treatment. It therefore is apparent that X-ray therapy has a rational basis and if all diseases responded to radiation as does exophthalmic goiter, the practice of radiology would be a delight.

The objections made against radiation are:

A. *Effect is not permanent.* This, of course, time will answer in my own experience, one very bad case has remained well for seven years and the reports dating back ten to fourteen years do not substantiate this objection.

B. *The slowness of the results give chance for further damage to an already pathological heart.* Unless rest can be secured this objection may be tenable, however, under these conditions the danger incident to so severe a surgical procedure may and should place these cases in the inoperable class.

C. *The operation, if found necessary, is rendered more difficult following radiation.* In this I have no experience. The dosage needed to bring about the end desired should not, and need not, be so large as to bring about such a condition. Facts are, patients who have had suitable radiation, rarely, if ever, come to operation, so it is difficult to collect any statistics on this point.

D. *Danger or damage to the over lying skin followed by an atrophy and telangiectasis.* In the early days of its use, this was not an uncommon sequal, however, with modern technic, in trained hands, this should not and does not follow; indeed it is not necessary to produce even an erythema of the skin to obtain an adequate dose to cure the patient.

So far as I am aware these are the only objections raised against the X-ray treatment of goiter and I submit to the good judgment of the internist they are not very weighty.

I shall not weary you with a detailed report of my cases. Suffice it to say, they were all referred by physicians in Muskogee and vicinity (one being the daughter of a physician) and were typical exophthalmic goiters with metabolic rate of 30 to 90 plus, pulse 120 to 155, loss of weight, tremors, extreme nervousness and exophthalmus. In a general way the pulse and metabolic rate subsides in ratio to the clinical improvement, but to this I had one exception. In three cases I was able to obtain rest, which is desirable; in one of my worst cases, this was not possible. The patient, however made a complete recovery. If the diagnosis is made early and prompt treatment instituted, rest is not so important a factor. As soon as the tide changes and the clinical symptoms improve I proceed cautiously with treatment and in all my cases I have discontinued treatment with a mental reservation that I had not gone far enough and yet, to date, I have not retreated a single case. The only untoward symptoms occurred in three cases, in that there was a temporary hoarseness, due probably to the neglect in adequately proctecting the larynx.

In conclusion permit me to epitomize the advantages of X-ray treatment.

A. There is no mortality.

B. Except in advanced cases, the pa-

tient can continue his or her vocation while taking treatment.

C. Cases of high metabolic rate and rapid pulse are poor surgical risks but are amenable to X-ray.

D. With careful checking of pulse weight and metabolic rate the treatment or dose can be changed to meet the exegencies of the changing pathology.

E. Patients submit to this form of treatment earlier than surgery and thus escape possible cardiac damage caused by delay.

F. It is available when operation has failed. Twenty of Holmes' cases were postoperative.

G. The Thymus, no doubt plays a part in many cases of exophthalmic goiter and is always included when radiation is employed. This escapes the surgeon, a fact which may contribute to surgical failure.

H. In exophthalmic goiter, as in other diseases, (duodenal ulcer for instance) having a medical and surgical aspect, the medical should receive first consideration, if there is a reasonable hope of success.

I. In the matter of economy to the patient, admiting the radiologist fee to be the same as the surgeon, there is considerable saving in hospital and nurse expense.

J. Finally: In making a judgment between X-ray and surgery in the treatment of exophthalmic goiter, one must not assume that surgery is always a cure, in the most expert hands as in the Mayo Clinic there is a permanent cure in about 68 percent, and as X-ray treatment, to say the least, shows equally as good results, I submit that it is a conservative conclusion to say that all cases should have the benefit of X-ray therapy before resorting to surgery.

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HEART FACTS

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Is the pathology present in this heart? Sooner or later this question will confront the clinician, be he surgeon, obstetrician, or internist. The hope that this paper may be of some service at that time is the reason why it is presented for your consideration.

Our conceptions of diseases of the heart have changed markedly in the last few years on account of clinical observations based upon scientific studies of the circulatory system. The old school held that valvular diseases produced heart failure by additional load, and the internal stress thrown upon the heart muscle. The new school holds that this hypothesis is erroneous, and that loss of cardiac reserve and later heart failure is the result of myocardial changes and that when valvular lesions are present, they are only aids to the determination of the aetiology of the given case.

To substantiate these claims, they call attention to the fact that if the mitral or aortic valves of an animal be damaged deliberately the healthy heart muscle can cope with the additional load with little or no embarrassment. Right here it is safe to state that most of us, at some time or other have been surprised by the absence of symptoms presented by a patient with an undoubted valvular lesion. Osler reported that he had observed such a case for more than forty years. Many similar observations have been made by competent clinicians.

At this time I would like to present for your consideration the following classification of heart disease.

(1) The congenital type, which will not be considered in this paper.

(2) The infectious or rheumatic, a disease of youth, affecting primarily the mitral valve.

(3) The luetic heart with aortic regurgitation which usually makes its appearance in the third decade of life.

(4) The hypertensive heart associated with arterial hypertension appearing in the fourth or fifth decade, affecting the myocardium.

(5) The degeneration or sclerotic type, —often called the senile heart—affecting the vascular or conductive systems of the myocardium.

It is to be noted that in the earlier decades of life valvular lesions predominate, while later in life the presence of valvular lesions is the exception, unless there be

calcification of the aorta and valves due to senile changes. Heart failure cannot occur unless the myocardium has been damaged at some time in the past. The fact that this damage was not recognized may be a reflection upon our diagnostic ability.

The chief reliable signs of heart disease are:

(1) Definite enlargement of the heart.

(2) A diastolyic murmur.

(3) Persistant high blood pressure.

(4) Abnormal cardiac rate.

(5) Irregular rhythm induced or persisting after exercise.

(6) Electrographic changes.

With the exception of the electrocardiographic changes, these signs can be noted with a minimum equipment.

Much is said of the value of the electrocardiograph. In many cases its use does not give us the information desired, conversely in many cases it gives aid in diagnosis and treatment obtainable by no other means. It often calls attention to degenerative changes which have taken place in the myocardium up to that time wholly unsuspected. For this reason it is of value to the surgeon in his preoperative studies of patients, especially those who have passed the third decade of life. It is to be hoped that the time is not distant when the surgeon, if possible, will include this method as a part of his routine.

In the case of patient seen for the first time unless a careful study of (1) subjective symptoms (2) relation of the subjective symptoms to the physical or objective findings is made, no accurate evaluation of a heart condition can be made.

The question of heart strain, the result of violent exercise or the condition which is often termed athletic heart, naturally arises at this time. An answer to this question is given by Sir Thomas Lewis who states that "No physiological acts, no matter how heavy the burdens may be, ever exhausts the heart reserve. The reserve of the other bodily structures will fail before the heart is pushed to its limits of endurance." If there is obtained a history in which strain is admitted as a probable or primary cause, the chief part which this effort plays is clear, namely it has brought a waning cardiac reserve or a dormant lesion to light.

Heart failure is a term which is used to designate the inability of the heart to meet the demands or adapt itself to the needs of circulation. The symptoms are many and vary from the classical picture of which we are all familiar to those which if not correlated early may lead to disaster later.

The classical picture of heart failure comes under one of the following group:

(1) Anginal or what is often termed the protective type.

(2) Static often called congestive or oedematous or failure of function.

(3) Disturbance of rate and rhythm.

The earlier stages of heart failure do not present clear cut pictures but a careful study will show that sensory or static signs are present or changes in rate and rhythm of the heart's action.

The early symptoms are generalized in character, vague and may not suggest heart failure. The earliest symptoms are those of fatigue. Fatigue which compels the individual to curtail his activities. This is especially noted in the legs. Parasthesias in the legs develops easily upon standing without motion and which disappears upon taking a few steps or sitting down.

Symptoms referable to the respiratory tract vary from orthopnoea, breathlessness upon exertion, to a sense of fullness in the chest, tickling in the throat, a nonproductive cough, or as some patients express it only a thick wind. Polypnoea unnoticed by the patient is quite common. All of these symptoms are aggravated by exercise and are lessened upon rest. In older people a winter cough is very suggestive. Disturbance of sleep, awakening about 1 A. M. with sensations varying from a vague discomfort in the chest to a typical asthmatic attack. Physical findings show signs of stasis in the lungs.

The G. I. Tract: Frequently gastro-intestinal symptoms are the only ones noted and treatment is instituted for gastric condition for a long time before the cardiac condition is recognized. The usual symptoms are:

(1) Anorexia.

(2) Slow digestion or indigestion.

(3) Belching of gas and sense of fullness in the stomach.

(4) Certain foods, especially fats, are poorly borne.

(5) The tongue is often coated.

(6) Inability to endure tight bands of clothing or the belt so commonly worn.

The sensory disturbances of the abdomen are above the umbilicus. The epigastrium is sensative to pressure. In more advanced cases the liver is enlarged and tender, and the abdominal muscles resent deep palpation. Possibly all of these symptoms are not present but a careful history elicits that exercise more than food enhances these symptoms.

Attention has been called to the static type of heart failure or a failure of the function of the heart. The next type to be considered is the so called protective type where nature employs pain as a warning that the heart is being overtaxed. The severity of the pain may vary from a simple discomfort to real distress. It must be remembered that the pain is induced by exercise and relieved by rest. When pain is sub-sternal and radiates down the inner side of one or both arms it is called angina pectoris. The location of the pain varies. I recall one case of a patient, the removal of carious teeth and later all of his teeth, did not relieve the pain in his face. Study of this case revealed the pain was induced by exercise. Diagnosis: Sclerotic heart with anginal type of heart failure.

The well marked cases of angina present little difficulty of diagnosis but the possibility of coronary infarct must not be forgotten. Briefly, severe anginal pain not relieved by nitrates but requiring morphia, possibly in liberal doses, pain lasting some time, the patient frequently changing position or walking in hope of getting relief, points to infarct. If there be marked lowering of the blood pressure, irregular pulse, and inside of 48 hours slight fever and leucocytosis and possibly a friction rub, the diagnosis of angina should be made. In the patients of middle life, acute indigestion, in fact any abdominal crisis, the heart should be studied for possibility of an infarct before surgical intervention is undertaken.

Disturbances of rate and rhythm are important signs of myocardial disturbances. Any sudden change of rate or rhythm should be investigated at once. The response of the rate and rhythm to exercise reveals much. The failure of the rate to vary with exercise and rest is pathological. Pulse rate under 40 means complete heart block or a condition where the ventricles are beating and working independently of the normal impulse arising in the sinus node. It is due to failure of the auriculoventricular bundle to function. The higher rate means auricular flutter. Exercise may suddenly double the rate in the heart block while in auricular flutter the condition may be changed from a 4:1 to a 3:1 or 2:1 block. While in auricular flutter as well as in fibrillation partial heart block exists, in former there is definite ratio of the rate of the auricular contractions to that of the ventricles which is absent in the latter.

In febrile cases a marked change in rate or rhythm demands immediate attention. In diphtheria it is generally block, in pneumonia fibrillation. A rapid heart without any apparent reason makes an examination for thyrotoxicosis advisable. Any irregular cardiac rate whose irregularities are increased by exercise, even though there are no subjective symptoms demands prophylatic treatment for heart failure. Any case of aortic or hypertension whose heart rate after a moderate amount of rest is still in the upper eighties or more demands the same treatment.

The type of heart failure together with the age of the patient often gives us a good idea of the heart lesion. The congestive type is generally seen in the rheumatic and hypertensive types of heart disease. In mitral disease auricular fibrillation is generally associated with static heart failure and prompt digitalization is imperative. The static type seen in hypertension is due to myocardial degeneration and the response to cardiac therapy is not prompt. On the other hand leutic aortic regurgitation often is associated with a type of angina due to aortitis. These patients generally die before static heart failure is marked.

Angina and not static is the type of heart failure usually seen in the sclerotic type of heart disease. Thus it can be seen that the correlation of the subjective symptoms and the physical findings often give us a ready approach to the pathology before us.

This is an age of prophylatic medicine. It is the duty of the physician, once he has made the diagnosis of a heart lesion, to educate the patient to the realization of the importance of conserving his cardiac reserve and means of doing same. The treatment of heart disease is not by cardiac drugs. The first thing is to conserve the cardiac reserve. Later, if heart failure develops, treat the type of heart failure. In

auricular fibrillation with congestive heart failure, unless the ventricle is damaged resting the ventricle by producing partial heart block gives striking results.

The importance of the early recognition of heart failure cannot be underestimated. This is just as true as the early recognition of cancer, T. B. or syphilis or an acute surgical condition. One or more of these symptoms occur in all cases of failing heart, no matter what the academic diagnosis may be.

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EARLY SYMPTOMATOLOGY OF CARDIAC DECOMPENSATION

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The problem of heart disease has assumed widespread economic and social importance due to the knowledge gained in the last few years by periodic health examinations, from a careful examination of industrial workers, and from the large number of damaged hearts found in school children.

With this information available, greater progress may be expected in the future relative to cardiac conservation, providing physicians assume their responsibility toward their patient by thorough examinations, which they undoubtedly will in the light of the high ideals of the profession.

Cardiac failure, according to Sir John Broadbent, is the inability of the heart to discharge efficiently its function of circulating the blood, and the essential cause of heart failure is some damage to the heart muscle which impairs its efficiency as the propelling and regulating mechanism of the circulation.

The earliest manifestations of cardiac failure should be most accurately obtained, for they are the first and most important symptoms and signs of cardiac failure. The physical findings in early cardiac embarrassment may be, and usually are, slight or even negative, but a careful inquiry may elicit subjective symptoms of value, such as, breathlessness, indefinite sensations of oppression in the cardiac area, mild distress in the epigastrium, definite limitations as to physical exertion, cough, suggestive of bronchitis, but of course, due to pulmonary congestion.

As you have readily noticed, patients rarely complain in the same manner. One of the earliest symptoms in myocardial weakness is breathlessness upon exertion. This is the most reliable and generally satisfactory evidence of cardiac failure. In order to determine whether breathlessness on exertion is due to cardiac disease or not, it must be compared with the patient's previous powers of exertion without production of respiratory distress. The greater the damage to the heart muscle, the more readily will breathlessness be induced.

Another eary manifestation of cardiac embarrassment is precordial pain or distress which produces a feeling of anxiety in the patient. Pain due to myocardial change is considered as an expression of the exhaustion of the heart muscle, and the nature and extent of that impairment is determined to some degree by the severity of the pain. The pain occurs characteristically in paroxysms which are induced by effort or emotional stress. It is located in the upper sternal region, or upper left chest, and may radiate over the whole precordium, to the left shoulder, arm or hand, and to the left angle of the jaw.

Exhaustion and a tendency to become easily fatigued are frequent early symptoms. They occur especially toward the end of the day.

Edema is not commonly observed by the patient in the early stages of heart failure, because if it is present it is usually so slight as to escape attention readily. It is characteristically of the dependent type and is usually manifest toward evening as puffiness of the legs above the shoe tops. It shifts during recumbency so that it is absent from the legs in the morning. Complaint of rapid beating of the heart, or palpitation, is made occasionally.

Digestion is usually impaired, the appetite is poor and there is gaseous distension of the stomach and bowels, usually with constipation; an indefinite sensation in the right hypochondrium. These symptoms may not be attributed to pathology of the digestive organs per se; but it may be a cardio-vascular disturbance. Tenderness in the epigastrium is often present, but it is likely to be due to a congested liver, secondary to a cardiac condition, rather than to any pathology in the stomach. Examination will also likely reveal some moisture at the base of the right lung, which cannot be explained except by a beginning myocardial weakness.

It is essential to take the patient with early decompensation into our confidence and explain the necessity of preserving his physical well-being—he must learn to live within his physical means.

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BUNDLE BRANCH BLOCK

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It is an established fact that blocks of the branches of the bundle of His are a more frequent condition today than ever before. This is not a result of an increase of the condition itself but is due to the fact that the condition is diagnosed more frequently. With the advent of the electrocardiograph and the association of these findings with clinical manifestations which heretofore had been unexplained we can readily see and appreciate its increase.

A routine electrocardiogram on patients complaining of heart trouble has brought the condition into the lime-light more frequently.

Let us look rather briefly at the anatomy of the heart in so far as the heart beat and conduction system are concerned. The pacemaker—the sinus node—is situated at the sulcus terminalis near the junction of the superior vena cava with the right auricle. It is here that the impulse for cardiac contractions, as you know, originates. This impulse spreads over the auricle causing it to contract and reaches the auriculo-ventricular node (node of Tawara) which is situated in the posterior border of the inter-auricular septum. It is in this node that we find the beginning of the bundle of His. The bundle runs almost horizontally forward to the left and then downward. It crosses the auriculo-ventricular groove and hence establishes a connection between the auricles and the ventricles. At this point it divides into the right and left branches.

The left division of the bundle of His enters the cavity of the left ventricle near the anterior margin of the intra-ventricular septum underneath the junction of the right anterior and posterior cusps of the aortic valve. The right branch enters the cavity of the right ventricle slightly in front of the anterior attachment of the septal segment of the tricuspid valve.

Within the ventricles the branches divide into fine aborizations which completely encircle them—the Purkinje system.

All these fibers are located in the subendo-cardium, hence any damage to the same may affect the conduction system. Thus you can readily realize how frequent may occur aborization blocks. With these we are not concerned but rather with the complete block of either the right or left branches.

A bundle branch block, as previously stated, is not as rare as one might suppose, and in recent years it is beginning to fill medical literature, and unless one is acutely trained in the diagnosis of cardiac conditions, or invokes the aid of instrumental methods it will continue to be undiagnosed.

The etiology of this condition cannot be placed at the door of any one disease. Syphilis, in the form of gumma, is perhaps responsible for a great many cases. New growths of various kinds may destroy the branches.

Acute infection at times produces a branch block.

Sclerotic changes are perhaps the greatest offenders. These changes may be secondary to a slow, generalized arteriosclerotic vascular disease, or they may follow a coronary thrombosis which recovers.

In the beginning I should say that lesions of the left branch are rare. This seems to be generally borne out in all clinics and can perhaps be explained on an anatomic basis—namely; the right branch courses quite a long way before it begins to divide —hence the greater ease with which it may be destroyed by a single lesion, while the left branch begins to divide a very short distance from its origin, hence the difficulty with which it can be destroyed by a single lesion.

The condition may or may not be diagnosed clinically and it may or may not

be even suspected. This is the value of the electrocardiograph in these disorders, because from the electrocardiogram it can be absolutely diagnosed, but just a word of warning in reference to the electrocardiograph. The individual who uses the instrument alone to *diagnose* cardiac conditions is doomed to failure. Remember it should only be used as an aid. It is impossible to separate it from the clinical side entirely because it will not tell you how a heart appears clinically—how it responds to exercise—how the tones are—which are all important in the diagnosis and treatment of cardiac disorders.

Let us look at the clinical side of the condition. It is possible to recognize it at the bedside, in many cases, in patients presenting a cardiac picture, by the following:

1. In the first place there may be a visible bifid apex thrust which suggests asynchronous ventricular activity.

2. In the second place this bifid apex thrust may be palpable.

3. In the third place the heart sounds are feeble, sometimes practically inaudible, with a sound and an asynchronous murmur accompanying the two elements of the systolic thrust.

In many cases a reduplication of the second sound may be observed but not constantly.

The electrocardiogram gives rather a characteristic picture in bundle branch block. According to Hart, Herrick, Smith and others the following criteria may be used in diagnosing this condition:

1. The Q. R. S. complex exceeds .1 second.

2. The Q. R. S. complex shows considerable amplitude.

3. The Q. R. S. complex is notched in the leads of considerable amplitude.

4. The T wave is large and opposite in direction to the main deflection of the Q. R. S. complex.

There is still some controversy among cardiologists as to the difference between the tracings in a right and a left bundle branch block, but the most common interpretation seems to be that in blocks of the right branch, the main defection of the Q. R. S. complex is directed up in lead I and down in lead III, that is, the tracing is written by the left ventricle while in lesions of the left branch the opposite holds.

I would like to call your attention to three cases, the first a man, age 57 years, who two months before admission to the King's Daughters Hospital was seized with a severe pain under the sternum; the pain was not relieved by nitrates and morphine was required. The pain was accompanied by severe dyspnoea, which condition has existed since that time—improving at times—to grow worse at others.

On physical examination the heart was enlarged, the sounds were somewhat distant tending to approximate each other in quality. There appeared to be a somewhat split soft systolic murmur at the apex, suggesting a rather prolonged systole.

There were rales at the bases of both lungs and some engorgement of the liver.

Electrocardiogram showed a complete block of the right branch of the bundle of His.

He was digitalized, improved, and discharged to die suddenly three months later.

This man at the onset suffered a coronary thrombosis which destroyed the right bundle branch, giving us a characteristic tracing.

The second case a man, age 64, came to the hospital in November, 1928, complaining of pain over his heart on exertion, accompanied by shortness of breath.

On physical examination the heart was slightly enlarged downward and to the left. There was present a slight visible bifid apex thrust. On auscultation there was a soft systolic sound with an asynchronous systolic murmur at the apex with also a reduplication of the second sound. His blood pressure was 200 systolic and 128 diastolic.

Electrocardiogram showed a complete right bundle branch block and confirmed a clinical diagnosis of the same.

This man was suffering from mild angina pectoris and the slow sclerotic changes had destroyed the right branch of the bundle of His.

He is still under observation but unable to carry on his occupation on account of his pain and shortness of breath.

The third case a woman, age 53, came to the hospital complaining of shortness of breath with an occasional pain in the region of her heart which radiated down into her left arm.

On examination the heart was enlarged,

quite rapid, with sounds poor in character, approaching each other in quality. A peculiar murmur was present at the apex. Her blood pressure was 230 systolic and 140 diastolic. Her chest showed some evidence of congestion.

The electrocardiogram showed a block of the left branch of the bundle of His, which clinically was not suspected.

At present her condition is about the same after six months time.

Prognosis in these cases must be guarded. They are rarely seen in cases except those of advanced heart disease and a high mortality is to be expected.

T. Stewart Hart, in an analysis of twenty-five cases gave the following: Four had disappeared from sight and their outcome was unknown. Of the remaining twenty-one cases, only three were living, one having been under observation for four years, the other two for fourteen and ten months respectively. Eighteen were dead, a majority of them within six months after the condition was diagnosed. Two lived for one year and one for three and one half years. This is about the mortality percentage of most cardiologists. Paul D White, however, nas one case who has been under observation for eleven years.

In the treatment of bundle branch block nothing seems to be of much value. Even in those cases where a definite luetic infection is present anti-syphlitic treatment has little or no effect. Rest, measures to correct abnormal renal function, and in cases of decompensation, digitalis, seems to be our only dependable allies.

SUMMARY

1. The electrocardiograph is an excellent aid to the diagnosis of bundle branch blocks and as an aid in the prognosis of certain heart condtitions.

2. Lesions of the right branch are frequent.

3. Lesions of the left branch are rare.

4. Three cases of bundle branch block are shown.

5. Bundle branch blocks are seen only in cases of advanced heart disease and a high mortality is to be expected.

6. The treatment of bundle branch lesions has met with little success.

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MENINGOCOCCIC MENINGITIS

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This paper presents an analysis of 163 cases of meningococcic meningitis treated at the Isolation Hospital, St. Louis, during the years 1916, 1917 and 1918, and 126 cases during 1926, 1927, and part of 1928. The comparison of these two three year periods is made in order to bring out certain changes in the method of treatment which have been brought about and to show the results obtained.

Persistent headache, nausea, vomiting, irregular temperature and pulse, pain in the back of the neck or along the vertebral column followed by stiffness of the neck and back, restlessness and irritability or occasionally stupor are the usual symptoms of meningitis. These symptoms are not limited to the epidemic form of the disease but may occur in meningitis of any type. Small reddened macules scattered over the trunk or extremities, sometimes described as "flea-bite" hemorrhages, and resembling the rose-spot of typhoid fever occur in some of the cases of meningococcic meningitis and are an aid in diagnosis.

When we see a patient with these symptoms, we make a skin test for sensitization to horse serum and do a lumbar puncture. The sensitization test is started at this time in order that it may be read after the lumbar puncture is finished. If on puncture, the spinal fluid appears turbid, milky or purulent and a sufficient amount of fluid has been allowed to escape slowly to lessen the intracranial pressure, anti-men-

ingococcic serum is administered intraspinally without removing the lumbar puncture needle. This saves the patient another lumbar puncture if, after the fluid is examined in the laboratory, it proves to be meningococcic in type, and probably doesn't harm him if it should be any other type of meningitis. As soon as the intraspinal injection is completed, serum is given intravenously if the skin sensitization test is negative. Serum is given in all cases of *turbid, milky, or purulent spinal fluid,* for the reason that there is no way of differentiating types of purulent meningitis on the appearance of the freshly removed fluid.

If after laboratory examination the case is presumed or proved to be meningococcic meningitis, it is our practice to administer serum intravenously and intraspinally at twelve hour intervals for three or four doses, after which the interval is lengthened to 18 or 24 hours. Rarely do we give more than three injections into the vein.

If during the removal of spinal fluid the patient complains suddenly of headache, or, if unconscious, he screams as if in pain, the flow is stopped for a few seconds and fluid again allowed to come out slowly until the headache recurs or until the pressure has been relieved. Twenty to fifty ccs. is the usual amount of spinal fluid removed.

The average dose of serum for a child is from 15 to 20 ccs, and for an adult from 20 to 30 ccs given under gravity pressure only. The intravenous dose we used was 15 cc for a child and 30 cc for an adult.

In general, the quantity of serum given at one time intraspinally is less than the amount of spinal fluid removed for three reasons:

First, to relieve intracranial pressure;

Second, to allow for freer circulation of the serum intraspinally; and

Third, to leave room for the increased production of spinal fluid which will follow as a result of the disease itself, and from the irritant properties of the horse serum.

At successive punctures serum of different biological houses is used, since it is possible that one serum may contain antibodies for a particular strain of meningococcus which is absent in another serum. The administration of serum is continued until the spinal fluid is organism free and until the patient is clinically much improved, or until he has had a total of six or eight intraspinal injections.

It occasionally happens after repeated lumbar punctures that little or no spinal fluid is obtained, though it is evident that the puncture is properly done. This is due to blockage higher up in the canal, and justifies going in at a higher level. A puncture at the next or second higher level will many times give fluid, but if this fails we resort to puncture of the Cisterna Magna entering below the base of the skull. The technique of the puncture of the Cisterna Magna is as follows, quoting from Ayer's' original article:

"Place the patient on his side as for lumbar puncture, maintaining the alinement of the vertebral column and flex the neck moderately. The thumb of the left hand is placed on the spine of the axis and the needle inserted in midline just above the thumb. The needle may be rapidly pushed through the skin but should then be cautiously and carefully forced upward and forward in line with the external auditory meatus and glabella until the dura is pierced. If the dura is entered at this angle there is usually a distance of 2.5 to 3.0 cm between the dura and medulla.. It is good practice to aim a little higher than the external auditory meatus and if the needle strikes the occiput to depress just enough to pass the dura at its uppermost attachment to foramen magnum. At its entrance the same sudden 'give' is felt as in lumbar puncture."

Just as the Cisterna puncture has been a decided help in the treatment of the acute stage of the disease, so also has lumbar and Cisterna drainage during the convalescent stage. During convalescence patients not infrequently develop within two or three days of the last injection of serum, symptoms of increased intracranial pressure as shown by headache, vomiting, occasionally fever and irritability. Lumbar puncture in these patients gives water-clear fluid under increased pressure.

Whenever a patient presumably convalescing has headache, nausea or vomiting, sudden elevation of temperature and stiffness of the neck, with increased white blood cell count, it is more likely due to a relapse than merely to an increased quantity of fluid. Should the fluid appear turbid on puncture at this time, antimeningococcic serum must be given intraspinally as before, but *NOT* intravenously because of the danger of an anaphylactic reaction.

There were five cases with distinct relapses in our series. Each case again had a turbid spinal fluid after it once had been clear and there was a reappearance of meningococci in the spinal fluid. Four of these patients eventually recovered after having one or two relapses each.

In addition to the relapses which occasionally occur, there are sometimes certain permanent residual injuries in an individual recovering from this disease. The most frequent residual finding in our cases was deafness. Deafness occurred 7 times bilaterally and once unilaterally. There were three ocular muscle paralyses; one optic atrophy in an infant; one hemiplegia, one atrophy of the deltoid muscle.

Of the 88 patients recovering, 14 showed the residual symptoms enumerated, a total of fourteen percent.

In comparing the results obtained in the two series of cases, we find

	1916-18	1926-28
Average number of lumbar punctures in patients recovering	5.6	5 5
Number of Ventricular punctures	17	4
Number of cisterna punctures	None	102
Average amount of serum in spine	111 cc	116 cc
Average amount of serum in vein	0	52 cc
Number of drainages	46	121
Total number of cases	162	126
Mortality	55%	30%

Table No. 1

TABLE SHOWING GROSS MORTALITY

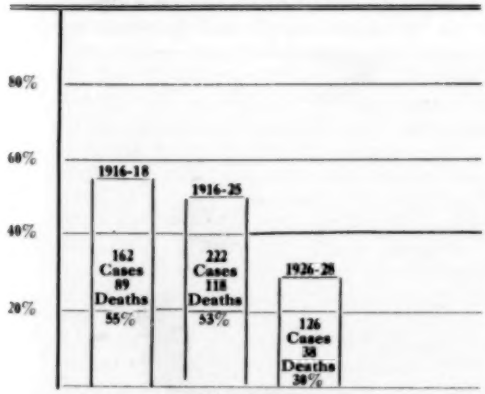
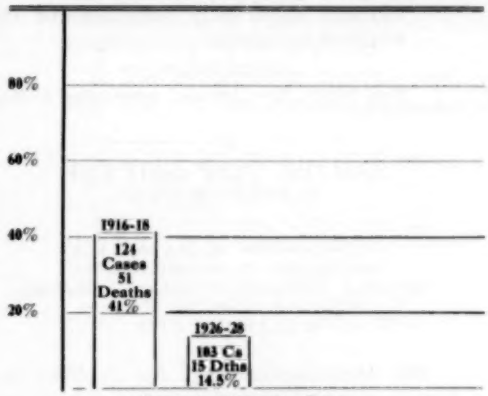


Table No. 2

1916-17-18, 162 cases, 89 deaths, mortality 55%
1926-27-28, 126 cases, 38 deaths, mortality 30%

We see then a lowering of the general mortality rate in the two groups from 55 percent to 30 percent. A more striking reduction in mortality occurs, however, when we consider the patients surviving the

MORTALITY OF PATIENTS LIVING 48 HOURS AFTER HOSPITALIZATION



Corrected Mortality Table

first 48 hours after admission. Of the 89 deaths in the first group, 38 occurred within the first 48 hours after hospitalization, and 51 occurred later. Of the 59 deaths in the second group, 34 died within 48 hours after admission to the hospital, and 25 died after that interval. In the first group this mortality is 41 percent and in the second group 15 percent. We believe that this reduction in mortality is due to the more intensive treatment received in the first 48 hours after hospitalization. Undoubtedly there has been gradual improvement in the serum during the ten years but the combined mortality rate from 1916 to 1926 inclusive is in excess of 50 percent, and the abrupt drop to 30 percent came in 1927 coincident with the more intensive treatment.

The average amount of serum given intraspinally in the two groups is almost identical; 111 ccs and 116 ccs respectively. The second group received in addition to the intraspinal serum an average of 52 ccs of serum intravenously and in this group serum was administered 71 times into the Cisterna Magna when the lumbar route was blocked.

CONCLUSIONS

1. The mortality rate in meningococcic meningitis at the Isolation Hospital, St. Louis, has been reduced.
2. The most striking reduction in mortality is in those patients surviving the first 48 hours after hospitalization.

3. The shorter interval between intraspinal injections of serum, the use of serum intravenously, and the introduction of serum into the Cisterna Magna when the lumbar route was blocked apparently accounts for the lowered mortality.

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A SLIDE TEST AND THE WASSERMANN

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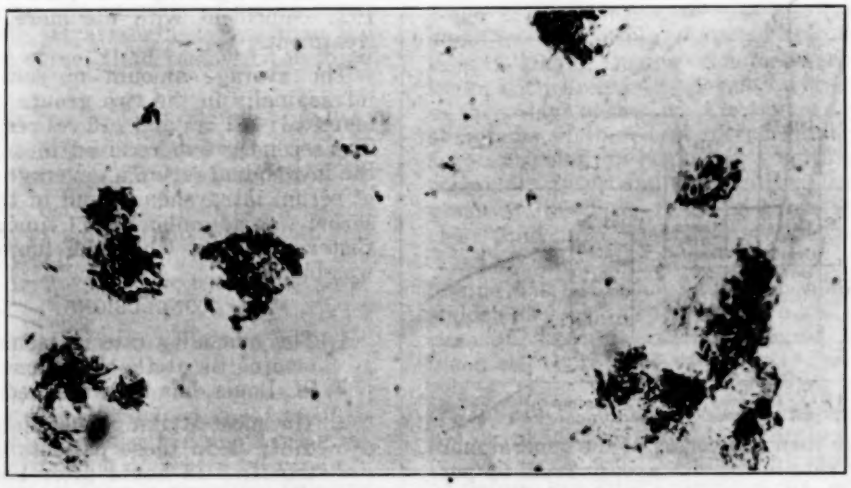
The precipitation test for syphilis has become one of the recognized laboratory tests. Most laboratories are using the precipitation test either singly, or in connection with the complement fixation test. Thousands of tests have been compared in many different laboratories, nearly all of which indicate that the precipitation tests agree in a very high percent of the cases and, perhaps, agree with the clinical findings in a higher percent than does the complement fixation test. The microscopic precipitation test for syphilis has been used by Kahn, Priestly, Kline and others, for several years but valuable reports have recently been made which indicate that this test agrees with the conditions of the patient in even a higher percent than the Kolmer complement fixation test. Kline has prepared an acetone insoluble antigen which has been found satisfactory and which seems to be more reliable than the Kahn antigen. Oglesby and Knapp have reported perfect agreement in one thousand tests in which the Kline antigen was used in both the macroscopic and microscopic tests. Just as the microscopic agglutination test for blood typing has superceded the macroscopic test, and the microscopic Widal test has superceded the macroscopic Widal, the microscopic precipitation test threatens to supercede the macroscopic test. There are, it seems to me, certain definite reasons for this, if the microscopic test proves as reliable as the macroscopic.

1. In children, a few drops of blood which may be taken from the tip of the finger or the lobe of the ear, is sufficient for this test. It seems agreed among laboratory workers that the cord blood for complement fixation tests is not entirely satisfactory, and that it is inadvisable to do routine fontanel punctures. As a result, the test is not done. It is certainly not a simple procedure to do a fontanel puncture and it is a procedure which should not be attempted except by an experienced physician. To obtain enough blood by other methods, is often very difficult, even in children up to three or four years of age.

2. In emergencies, it is often necessary to take blood from donors for transfusions, or some other similar emergency and get a so-called "quick" report. Both the macroscopic and microscopic precipitation tests have the advantage that a report can be



(1) FOUR PLUS PRECIPITATION TEST

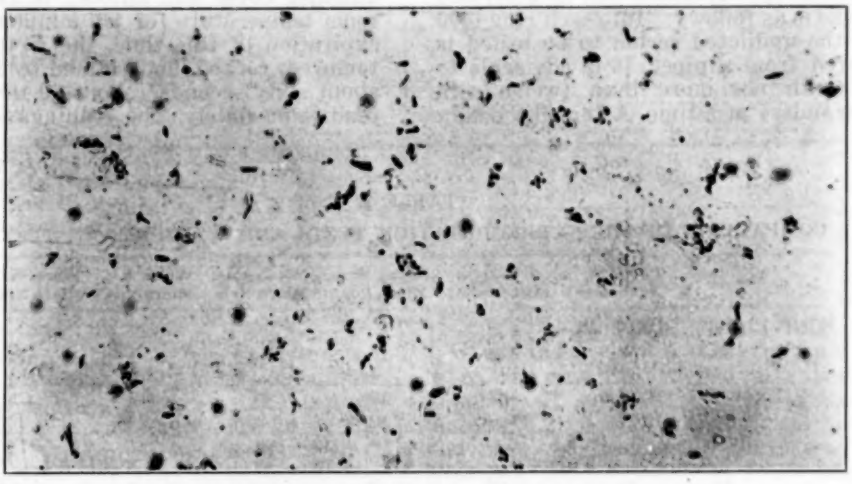
furnished within one hour's time, easily. No such rapid complement fixation test would be reliable.

3. The microscopic test is much more clear-cut and easily read than is the macroscopic. It has been our experience, that occasionally, even experienced technicians disagree on the exact reading of the macroscopic test. This could hardly be possible with the microscopic. I believe the accompanying photographs illustrate satisfactorily, this point.

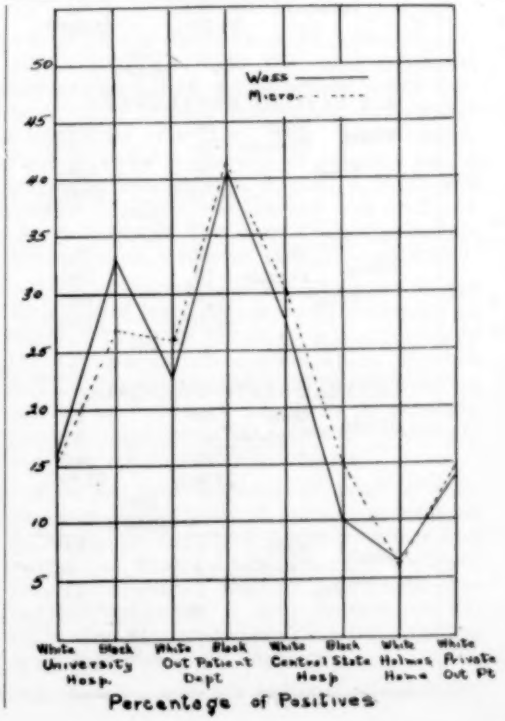
4. The test is a good check on the complement fixation test, or what other method happens to be in use. Stokes has recently emphasized the importance of at least two tests being reported in each case by the following statement: "Refuse any longer, to accept a report based on a single type or procedure, i.e., complement fixation only, or precipitation only. For ordinary practice, as well as for the expert, it is not too much to require both, and three or four tests of radically different types are often helpful." In doubtful cases, or so-called pseudosyphilis, in which the responsibility of diagnosis is placed upon the laboratory, I believe all the reliable tests possible should be used to reenforce the laboratory decision. This applies to all those cases in which the laboratory report and the clinical findings disagree, or in which as happens not infrequently, separate laboratories disagree. Hinton has recently described the Hinton Glycerol Cholesterol Agglutination reaction which may prove to be another method useful in this respect.

5. The microprecipitation test is simple and economical. The antigen (0.0075 cc); serum (0.05 cc); a 1 cc pipet graduated in 0.01 cc; a glass slide and a microscope fulfill the requirements for appartus. I believe a reading glass instead of a microscope would be satisfactory.

6. The complement fixation test, especially the ice box method, gives a certain



(2) NEGATIVE MICRO PRECIPITATION TEST



number of anticomplementary reactions even on fresh specimens, and often repeatedly so. This means practically no report at all. In our experience, the microprecipitation test has been in agreement with the clinicians' findings in 89.85 percent of the known cases which were anticomplementary in the Kolmer test.

PROCEDURE

The microprecipitation test as described by Kline is as follows: "Into each ring 0.06 cc of the undiluted serum to be tested is delivered from a pipet. It is advisable to work with not more than twelve sera (three slides) at a time. After all the sera are pipetted, 1 drop of antigen dilution (0.015 cc) is allowed to fall into the serum in each ring. After all the antigen is pipetted, the small amount in each ring is evenly distributed by rapidly stirring the mixture with a tooth pick (a new tooth pick with a flat end a few millimeters in width is used for each test). After all the mixtures are complete, the slides, without further agitation, are placed below the humidor cover and allowed to remain at room temperature for ten minutes. At the expiration of this time, the first slide is removed, rocked, and rotated by hand for about sixty seconds (about 60 times) and read immediately. The readings are made

TABLE 1.

COMPARISON OF MICRO PRECIPITATION TESTS AND WASSERMANN TESTS

		Positive Agreement	Negative Agreement	Wass. Neg. Micro Pos.	Wass. Pos. Micro Neg.	Wass. A.C. Micro Pos.	Wass. A.C. Micro Neg.
UNIVERSITY HOSPITAL—							
White	Male	50	312	15	14	4	12
	Female	32	191	4	7	2	9
Total		82	503	19	21	6	21
		12.57%	77.14%	2.91%	3.22%	0.92%	3.22%
		585		40		27	
		89.72%		6.13%		4.14%	
Black	Male	14	30	0	2	2	1
	Female	13	34	0	4	1	0
Total		27	64	0	6	3	1
		26.73%	63.36%		5.94%	2.97%	0.99%
		91		6		4	
		90.09%		5.94%		3.96%	
OUT PATIENT DEPARTMENT—							
White	Male	60	161	16	6	2	7
	Female	38	189	15	8	1	1
Total		98	350	31	14	3	8
		19.44%	69.44%	6.15%	2.77%	.59%	1.58%
		448		45		11	
		88.88%		8.92%		2.18%	
Black	Male	48	56	9	6	0	0
	Female	70	109	6	7	2	8
Total		118	165	15	13	2	8
		36.76%	51.40%	4.67%	4.04%	.62%	2.49%
		283		28		10	
		88.16%		8.72%		3.11%	
CENTRAL STATE HOSPITAL—							
White	Male	52	97	10	6	9	8
	Female	11	49	4	1	2	4
Total		63	146	14	7	11	12
		24.90%	57.70%	5.53%	2.76%	4.34%	4.74%
		209		21		23	
		82.60%		8.30%		9.09%	
Black	Male	1	12	1	0		
	Female	1	5				
Total		2	17	1	0	0	0
		10%	85%	5%			
		19		1		0	
		95%		5%		0	

TABLE 2.

COMPARISON OF MICRO PRECIPITATION TESTS AND WASSERMANN TESTS

	Positive Agreement	Negative Agreement	Wass. Neg. Micro Pos.	Wass. Pos. Micro Neg.	Wass. A.C. Micro Pos.	Wass. A.C. Micro Neg.
HOLMES' HOME—						
Mothers	15	147				1
	9.20%	90.79%				.006%
	162				1	
	99.99%				.006%	
Babies	2	90	1	2	1	14
	1.81%	81.81%	.90%	1.81%	.90%	12.72%
Total	92		3		15	
	83.63%		2.72%		13.63%	
OUTSIDE PRIVATE PATIENTS—						
Males	9	45	1	3	2	3
Females	1	27	3	0	1	0
Total	10	72	4	3	3	3
	10.52%	75.79%	4.21%	3.15%	3.15%	3.15%
	82		7		6	
	86.31%		7.36%		7.31%	

through the microscope (16 mm objective, 10 or 12.5 eyepiece) with the light cut down as in studying urinary sediments and recorded in terms of pluses according to the size of the clumps. Because of the importance of the test, it is strongly recommended that it be done in duplicates, different antigens being used."

We have modified the test only in that we use a 0.2 cc pipet calibrated in 0.01 and a glass slide 6" x 4" marked in 12 squares by melted wax. After mixing the antigen and serum by rotating, we place the slide on a rack in the waterbath with the lid down, to prevent evaporation.

RESULTS OF 2222 COMPARATIVE TESTS

Specimens represented patients from Central Oklahoma State Hospital for Insane; Eastern Oklahoma State Hospital for Insane; Holmes Home of Redeeming Love, as hospital for unfortunate girls; Out-patient Department, University Hospital; University Hospital; and a few private outside patients.

Of 2222 specimens collected from June 1, 1928, to March 1, 1929, the accompanying tables 1 and 2, give exact results, as recorded for the different departments. The chart represents in a graphic manner the agreement of the two tests expressed in percentage of positives.

Of 2222 tests, 2070 or 93.16 percent agreed. 96 were anticomplementary leaving 152 or 6.84 percent which disagreed in positive or negative results. Weak positives were included.

Of the 152 cases or 6.84 percent in which there was disagreement, 30 gave doubtful histories. 73 or 59.83 percent of the remaining 122 agreed in the clinical history and previous findings in the cases with Kolmer's test, and 49 or 40.15 percent agreed with the microprecipitation test.

CASE REPORTS

1. M. K., a white man, 31 years of age, with a clinical history of chronic nephritis and syphilis, had a chancre 9 years previous, was treated irregularly but fairly consistently for the past three years. Patient gave a history of having had a negative Wassermann August 6, 1928, and August 13, 1928, the Kolmer was anticomplementary. On the same dates the microprecipitation test was strongly positive.

2. H. G., a white male, 45 years of age with aortic insufficiency and a history of chancre 12 years previous, gave February 13, 1929, an anticomplementary Kolmer and a strongly positive microprecipitation. Again on February 15, 1929, a strongly positive Kolmer and a second strongly positive microprecipitation.

3. C. C., a white male, 20 years of age, who had a diagnosis of spastic paraplegia following an injury 4 years previous and a negative venereal history, gave four anticomplementary Kolmer reactions between September 3 and September 21, 1928. The microprecipitation tests on the same dates were all negative.

4. A. J., a private patient, white male,

33 years of age, with a positive history, primary followed by secondaries, 3 years previous. Patient had had a negative Wassermann at Amarillo, a positive at Dallas, and in our laboratory, a weak positive Kolmer and a negative microprecipitation. The patient finally admitted irregular treatment during past two years.

5. Laura, a young pregnant girl from Holmes Home, gave, on June 5, 1928, a very weak positive Kolmer and negative microprecipitation. June 12, 1928, both tests were negative and on June 21, Kolmer negative and a 2 plus microprecipitation test. July 8, 1928, cord blood Kolmer was negative and microprecipitation was negative. Patient gave a negative history.

The above cases represent only a few of the many conflicting reports with which we are confronted.

COMMENT

It is to me, a lamentable fact that the laboratory test for syphilis has fallen into the disrepute that it most certainly has earned. Kolmer has made much advancement in standardization of the complement fixation test, Kahn, Kline, and others have done much with the precipitation tests and yet, unfortunately, for the patient and the physician, there are too many conflicting reports. I believe our patients are entitled to all the tests available when there is a disagreement or a question as to diagnosis. A single test, especially by inexperienced serologists is unfair to the patient and the physician. When there is a disagreement I believe the laboratory should assume the responsibility of checking and rechecking the test in every known way.

CONCLUSION

1. The microprecipitation test as devised by Dr. Kline has, in our experience, compared favorably with the Kolmer complement fixation test for syphilis.

2. The microprecipitation test has certain advantages over the macroprecipitation or Kahn test.

3. At least two tests for syphilis should be used routinely and any disagreement carefully checked. Any single test is not satisfactory, especially so in the hands of an inexperienced serologist.

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SPONTANEOUS HEALING IN VESICO-UTERINE FISTULA FOLLOWING LABOR

Each of ten cases reported by George Kirby Sims, Chicago (Journal A. M. A., March 10, 1928), followed labor. In three, forceps were applied; in two others an ampule of pituitary had been administered before delivery. The remaining six patients gave a history of prolonged labor in which the uterine contractions were unusually strong. Four of these had moderately contracted pelves. In each of the ten cases the fetal membranes had been ruptured several hours previous to the delivery. Sims concludes that vesico-uterine fistulas may be the sequelae to traumatism in labor by forceps manipulation, either by carelessness or through incompetence, especially in an attempt at rotation. The condition may be brought about through a lack of skill in doing a version. Vesico-uterine fistulas may follow an uninterrupted, prolonged labor in which there have been unusually strong uterine contractions, thereby keeping the fetal head imposed on the rami pubis with the bladder interposed between the head and the pubic bones. This type of lesion in the majority of cases reported has not, according to the history, been the result of traumatism on the part of the accoucheur, though he may have been reluctant to report this feature of his work. Practically all these fistulas have occurred in cases in which there was a prolonged labor, a moderately contracted pelvis, or a combination of the two, with the bag of water rupturing several hours previous to the delivery. The lesion may be brought about following the administration of pituitary extract. Great care should be exercised in all labors in which it is necessary to intervene, especially in those in which the membranes have been ruptured for several hours. Vesico-urterine fistulas probably occur more frequently than is observed or reported, as a result, in many instances, of a small opening so situated as to make it a valvular type of lesion, thereby enhancing its opportunity for rapid union.

SYSTOLIC BLOOD PRESSURES OF HEALTHY ADULTS IN RELATION TO BODY WEIGHT

A slight but statistically significant correlation between systolic blood pressure and the weight of a number of healthy persons has been found by Edward G. Huber, Atlanta, Ga. (Journal A. M. A., May 14, 1927), but on further analysis it appears probable that much of that correlation is due to the fact that underweight and hypotension are much more closely associated than overweight and hypertension. Forty-nine per cent of those who are more than 10 per cent underweight have subnormal blood pressures; only 18 per cent of those overweight have hypernormal pressures. Classifying blood pressures into two classes, those over 140 and those under 110, it is shown that 22 per cent of the former are underweight and 14 per cent overweight. Those with hypotension are 53 per cent underweight and 6 per cent overweight.

THE JOURNAL

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Articles sent this Journal for publication and all those read at the annual meetings of the State Association are the sole property of this Journal. The Journal relies on each individual contributor's strict adherence to this well-known rule of medical journalism. In the event an article sent this Journal for publication is published before appearance in the Journal, the manuscript will be returned to the writer.

Failure to receive The Journal should call for immediate notification of the editor, Barnes Building, Muskogee, Oklahoma.

Local news of possible interest to the medical profession, notes on removals, changes in address, births, deaths and weddings will be gratefully received.

Advertising of articles, drugs or compounds unapproved by the Council on Pharmacy of the A. M. A., will not be accepted.

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EDITORIAL

A MESSAGE TO COUNTY SOCIETY OFFICERS

The rather brief and not too uncomfortable Oklahoma summer has passed and there now lies before the Oklahoma profession many months of temperate and cool weather, which are those best adapted for study and work.

The success and achievements of the County Medical Society depend largely upon the executive ability and persistent efforts of a good president and secretary. These officers throughout the State should now make it their duty to re-convene their various County Societies and lay out their work which would be best so arranged as to cover the months until hot weather again arrives. These meetings are made more attractive, as a rule, by occasionally having some able outsider from another county to either read a paper or address the meeting upon matters affecting the profession. In some counties a program committee has been found to function very well in that they have been able to secure the maximum of production from the members.

A phase which may not have occurred to many localities and which, so far as is known, has only been put in practice in Muskogee County, and which it is believed will prove of great benefit to those physicians participating, is that of affiliation with the Extension Department of the State University. In the Muskogee County case, 14 physicians secured nine weeks of dissection, surgical anatomy and some cadaveric surgery at a very nominal sum. This did not interfere to any degree with their work and was executed at night so there was very little interference with the normal routine of the individual. It is believed that where one or two localities can organize such classes and induce the aid and cooperation of the University Medical Department that very great and lasting benefit will result for those participating.

The object of this is to attempt to induce County Society Officers to stimulate their members to immediate activity along whatever medical lines they deem most beneficial.

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INTRAVENOUS SODIUM AMYTAL AS AN ANESTHETIC

The barbiturates, in their many forms and compounds and under many different trade names, have long been used in various dosage as hypnotics and sedatives. For some time past many surgeons have used phenobarbital and later a refined product, sodium barbital, hypodermically, preliminary to the use of various forms of regional anesthesia, especially sacral and local. From June 1, 1929 to July 24, 1929, J. S. Lundy (1) and his associates have been using the barbiturates both in animal experimentation and intravenously for the induction of anesthesia in surgical cases. The observer is astonished at the brilliancy,

(1) Proceedings, Staff Meeting, Mayo Clinic, Volume 4, No. 30, Rochester, Minnesota. July 24, 1929.

promptness and efficiency of the results of this anesthetic. It was first noted that animals treated with sodium amytal or (sodium iso-amyl-ethyl barbiturate) intravenously were free from the convulsions often induced by the local anesthetic. During the time above noted Sistrunk and others have used the amytal intravenously in hundreds of cases. The writer observed this in many cases and is inclined to believe that sodium amytal, intravenously, may supplant a great deal of the routine and more dangerous general anesthesia now in use. No fatality and very few irritating or bad results have been noted.

The advantages are: (1) Quiet induction of anesthesia without unpleasantness; the patient unaware that an anesthetic is being induced. (1) Quiet respiration, facilitating intra-abdominal and other operations, and particularly amputation of the breast. (3) Postoperative sleep from twelve to seventy-two hours' duration with more or less loss of memory for events, especially painful events, occurring during the sleep. (4) Absence of postoperative nausea and vomiting.

The patients are almost unanimous in their preference for this anesthetic where they have had experience with other types.

The disadvantages are: Especially in surgical cases, those which follow a lowered respiration, long and profound sleep and of course these must be guarded against. There must be frequent change in position, administration as a rule is followed by some fall of blood pressure, a too rapid injection may induce a marked fall, so the drug is introduced at the rate of one and one-half to two grains per minute. The average dose being from about eleven to fifteen grains. Delirium may occur postoperatively but this is usually where large doses, twenty-two and one half to thirty grains had been administered. It was noted that probably about twenty-five percent of the patients had some degree of postoperative excitement. Due to prolonged and deep sleep this anesthesia is probably not suitable for tonsillectomies and other operations about the nose and throat, as the sleep may be so deep that an inspiration pneumonia could be induced. There was, however, no objections to its use in thyroidectomy.

The sponsors of this type of anesthesia are enthusiastic and suggest its many uses, not only as an anesthetic but as an alternative to futile doses of morphine in long drawn out terminal cases. It is said that in some cases comparative ease was obtained over a time of several weeks. In surgical cases it has the advantage, that if more complete relaxation is needed, ethylene, ether or nitrous oxide may be supplemented.

As an anesthesia which will permit the patient from one-half to three days' comparative ease after an operation it must be considered a remarkable achievement.

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Editorial Notes—Personal and General

DR. I. V. HARDY, Medford, attended The Mayo Clinics in September.

DR. E. A. AISENSTADT, Picher, was on active duty as Medical Reserve Officer at Ft. Sill in September.

DR. and MRS. H. T. BALLANTINE and family, Muskogee, have returned after a visit of several months to European points.

DR. C. N. TALLEY, Marlow, has returned home after having spent the past few weeks in New Orleans taking post graduate work.

DR. J. H. VEAZY, formerly of Madill, has moved to Sherman, Texas, where he has accepted a position on the staff of the Wilson N. Jones hospital.

DR. W. C. DARWIN, Woodward, has returned from a three months' stay at John Hopkins University where he took a special course in diagnosis and surgery.

DR. and Mrs. D. W. LeMASTER, Tulsa, arrived home the latter part of September from Europe, where Dr. LeMaster has been attending the Royal College in Vienna.

DR. J. H. SMITH, Seminole, has returned from a trip to London and Paris, where he combined a vacation with post graduate work in clinics of the two European cities.

DR. R. Q. ATCHLEY, Tulsa, visited Eastern clinics in August at John Hopkins and the clinic of Dr. Wayne Babcock of Philadelphia as well as those of New York City. Dr. Atchley did some special work in spinal anaesthesia.

STEPHENS COUNTY MEDICAL SOCIETY met in Duncan September 24, as the guests of Drs. Burnett, Overton and Hall. Drs. A. L. Blesh and A. M. Young, Oklahoma City, gave an address and read a paper, respectively, "Surgical Diagnosis" and "Veneral Diseases." The meeting was very well attended.

OTTAWA COUNTY MEDICAL NEWS

DR. A. M. (Andy) COOTER and wife spent the month of August in cool Colorado.

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DR. G. P. McNAUGHTON, Miami, spent several days in Chicago the latter part of August, on business.

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DR. J. T. RANSONE, Washington, D. C., has recently joined the Bureau of Mines' Clinic at Picher.

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DR. L. W. TROUT, Afton, recently returned from a six weeks' vacation in his old home in Tennessee.

—o—

DR. J. B. HAMPTON, Commerce, attended the National Shot Gun Tournament at Dayton, Ohio, the middle of August.

—o—

DR. D. T. HOLLOWAY, of the Marine Hospital at New Orleans, joined the U S. Bureau of Mines' Clinic at Picher, August 1.

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DR. WYLIE G. CHESNUT has severad his connection with the Miami Clinic, and is temporarily caring for the practice of Dr. J. B. Hampton at Commerce.

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DR. F. V. MERIWETHER, Chief of the U. S. Bureau of Mines' Clinic, at Picher, spent six weeks on a tour of the U .S. Government T. B. hospitals in July and August.

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DR. J. W. CRAIG, Miami, received his new commission as State Medical Director for the Modern Woodmen of America, for Oklahoma, August 22. The appointment is for four years.

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THE OTTAWA COUNTY MEDICAL ASSOCIATION resumed its meetings Wednesday, September 11, after the summer vacation. The September meeting was held at Camp Medical, on Cowskin River, on date stated.

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SHAWNEE MEDICAL NEWS

DR. EDGAR E. RICE, Shawnee, is now at home after an extended tour over the Western coast states. His itinerary included the Portland meeting of the A. M. A.

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DR. and MRS. EUGENE RICE, Shawnee, left August 4, for a nine months' European trip. Dr. Rice will spend the greater part of the time in Vienna doing post graduate work.

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MARRIED, July 17, 1929, Dr. F. Clinton Gallaher and Miss Maudie Bowles, both of Shawnee. After a two weeks' trip to Eastern and Southern points they are now at their home in Shawnee.

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DR. R. M. ANDERSON, Shawnee, has just returned from a European trip with the Interstate Post-Graduate Medical Association of North America during May, June and July. They attended clinics in England, Scotland, Norway, Sweden, Denmark, Germany and France. He reports a good time.

DOCTOR CHARLES ZENAS WILEY

Dr. C. Z. Wiley, one of the co-founders of Tulsa's first hospitals in 1905, and a pioneer physician of that city, died September 21, after an illness of several weeks; his death being unexpected by his family and friends.

Dr. Wiley was born in Cole county, Illinois, August 8, 1867. He married Miss Lavina Smith of Lakins, Kan., in 1887, and graduating from medicine in the University of Kansas in 1900. He practiced three years in Kansas City before coming to Tulsa, where he has lived until his death.

Besides his widow he leaves as immediate relatives a son, Dr. A. Ray Wiley and daughter, Mrs. Corrine Paul of Tulsa.

Dr. Wiley had many friends both in and out of the profession and was a prominent Mason, affiliated with the Tulsa lodge, Scottish Rite at Guthrie and the Shrine.

The Journal feels keen regret upon the passing of an honored member of the profession of Oklahoma.

DOCTOR CLAUDE T. HENDERSHOT

The following resolutions and obituary upon the death of Dr. Hendershot are published in his memory:

Claude Thomas Hendershot

We have met in this sanctuary this morning to convey our sympathy to the loved ones of the late Dr. Claude Thomas Hendershot, and express our appreciation of his life and service among us.

From April 13, 1874, until September 8, 1929, he was numbered among the congregation of the living as an active and contributing spirit for the welfare of his brother man.

Energetic and visioned as a youth he set out early to establish himself in professional life, and in 1897 his ambition was realized as the Louisville Medical College presented him with diploma and vested in him the right and responsibility to practice medicine. To this institution and his Medical Fraternity Phi Chi, he brought honor.

For seven years he ministered his profession among the people of Cannelton, Ind., moving then to Tulsa, where for 24 years his service and practice and respect has steadily and wonderfully increased.

In 1898, on Christmas Day, he was married to Beatrice Anderson. To this union came a little girl, Gladys by name, one day, to complete an exceedingly happy and beautiful home life. Shining out through Dr. Hendershot't busy professional life is the beautiful remembrance that his loved ones were uppermost in his thought and action. He left nothing to be desired in the realm of his home. His tender ministrations there are precious memories among his loved ones.

Upon moving to Tulsa, he entered into professional and civic life with the end in mind that he might minister as a worthy citizen. In church and state and profession he "grew in favor with God and his fellowmen."

He organized the First Tulsa County Medical Association of which organization he was president at the time of his death. Likewise was he prominent in the State medical circles and he was honored by the members in election to its highest office as president of the State Medical Association, which office he held at the time of his election to Glory. He was also secretary-treasurer of the St. John Hospital Medical Staff.

For three years he served as superintendent of the Sunday School of the First Methodist Episcopal Church of Tulsa, and for a number of years was teacher of the Ladies' Bible Class. All this he unwillingly gave up as the pressure of his profession grew upon him. Always has he felt a keen interest in the welfare of the church. It has been a dream of his for years that a beautiful church stand in Tulsa in the name of the Methodist Episcopal Society. It is fitting that such an edifice encloses this service to him to this day.

Besides hosts of friends everywhere there mourn this day most keenly his loving wife and daughter, Forest Dunlap her husband, and two precious little grandchildren, Billy and Mary Dunlap, Mrs. Carrie Best, sister, and E. D. Hendershot, brother, of Oklahoma City.

But he is gone—this summons to eternity has been answered. He gave his life to his fellowmen. He used himself up in service to humanity and truly may it be said of him in the words of the Master. "In as much as ye have done it unto the least of these my brethren, ye have done it unto me."

ROBERT M. LEHEW,
Associate Pastor First M. E. Church.

The Tulsa County Medical Society, at its first convening since the summer vacation, pauses in its deliberations to record its sense of loss in the passing of a great friend of organized medicine, Dr. Claude T. Hendershot.

No person has shown greater zeal in promoting the interests of the medical profession than did Dr. Hendershot; this devotion was shown by his being president at the same time, of both the State Medical Association and the Tulsa County Medical Society.

In the passing of Dr. Hendershot, the cause of the advancement of medicine has lost an ardent advocate and every doctor has lost a staunch friend.

A page in the minute book of the society, bearing this testimonial of its esteem of Dr. Hendershot, is hereby set aside and a copy is ordered sent to the bereaved family.

Done, this the 23rd day of September, 1929.

In the sudden passing of Dr. Claude T. Hendershot, the members of the Okmulgee County Medical Society realize and wish to express the belief that Oklahoma has lost in this man one who was a leader in organized medicine, an earnest apostle of scientific medicine, a lover of humanity, and a courteous, considerate friend to all those who knew him.

We therefore wish to express our sympathy to his bereaved family and to join our sorrow with that of the Tulsa County Medical Society and the members of the Oklahoma State Society in the passing of our president and leader.

Let this expression be sent to the family of Dr. Hendershot, to the Tulsa County Medical Society, the Oklahoma Medical Association, and spread upon the minutes of the Okmulgee Medical Society.

OKMULGEE COUNTY
MEDICAL SOCIETY,
L. B. Torrance,
President.

M. B. Glismann,
Secretary.

St. Johns Hospital, the sisters, the staff and the nurses are deeply mindful of the fact that individually and collectively they have suffered a very great loss in the untimely passing of Dr. C. T. Hendershot.

The staff of St. Johns Hospital particularly appreciated Dr. Hendershot's sterling qualities as exemplified in his routine work as secretary and adviser.

The wonderful attributes of the ready smile, the hearty handshake and the evident good fellowship will linger with his confreres—as will the memory of his unquestioned advancement of organized medicine.

Therefore, in heart-felt appreciation, we spread these sentiments on our records and transmit a copy of them to the bereaved family to whom we extend our deepest sympathy.

DR. J. FRED BOLTON,
DR. HENRY S. BROWNE,
DR. R. V. SMITH,
Resolution Committee.

The Ottawa County Medical Society at its regular autumn meeting at Camp Medical, near Turkey Ford, Oklahoma, on Wednesday afternoon, September 11th, 1929, adopted the following resolutions:

WHEREAS, the worthy president of our State Medical Association, Dr. C. T. Hendershot, of Tulsa, Oklahoma, has been called by death from the field of his labors—has paid to Mother Nature the debt we all owe, and whereas,

Ottawa County Medical Society, of Ottawa County, Oklahoma, feels the death of Dr. Hendershot as a personal loss, as he seemed almost one of us, as he had appeared on our programs at different times—the last time—May 8th, 1929, at our last full program meeting, and

WHEREAS, at that time he presented to us a very forceful paper on "Retrospection in Medicine," in which he set a high mark for his ideals in his chosen profession.

Now there, Be it resolved: That we extend our sympathy to the family and friends of Dr. Hendershot;

That we also extend our sympathy to the membership of the Oklahoma Medical Association, who have lost in the demise of Dr. Hendershot, a diligent and devoted leader;

That we realize in our bereavement the force of the words of the world's greatest orator: "That upon the tenderest heart the deepest shadows fall. All paths, whether filled with thorns or flowers, end here. Here success and failure are the same. The rag of wretchedness and the purple of power and all difference and distinction lose in the democracy of death. Character survives; goodness lives; love is immortal."

Be it further resolved that a copy of these resolutions be sent to the bereaved family, a copy sent to the Oklahoma State Medical Journal for publication, and a copy be spread on the records of our meeting of this day.

This the 11th day of September, 1929.

M. M. DEARMAN,
R. H. HARPER,
J. W. CRAIG,
Committee.

ORTHOPAEDIC SURGERY

Edited by Earl D. McBride, M.D
717 North Robinson Street, Oklahoma City.

Studies in Rickets. 111. Prevention by Means of Ultraviolet Irradiation. T. K. Selkirk, J. V. Greenebaum and A. G. Mitchell. J. A. M. A., XCI, 2057, Dec. 29, 1928.

The cure of rickets by ultraviolet-ray irradiation as demonstrated by Hyldschinsky ten years ago has since been confirmed by hundreds of investigators. Our next step was to ascertain if irradiation could be used as a preventative of rickets; if so, the amount and intervals of treatment necessary.

Diagnosis was made by X-ray picture taken of left wrist of a group of infants monthly until the age of eight months. These babies were divided into four groups for treatment as follows: (1) ultraviolet, (2) ultraviolet and cod-liver oil, (3) cod-liver oil and (4) neither ultraviolet nor cod-liver oil. Seventy-seven percent of the latter in colored and seventeen percent white babies developed rickets. Fifty-seven percent of cases diagnosed by X-ray showed rickets on clinical examination and diagnosis was made by X-ray before there was any clinical evidence. Fifty-one percent of group were female, forty-nine percent male; seventy-nine percent, colored, twenty-one percent white; seventy-nine percent breast fed. Babies born from December to April show slightly lower incidence of rickets than those born during remainder of year.

Group 1. Prevention in ninety-eight percent of cases to age of eight months with eleven minutes per month of ultraviolet ray.

Group 2. Same result as Group 1 with six minutes per month.

Group 3. Prevention in sixty-one percent. Record showed cod-liver oil given irregularly and in small doses. The average age when the irradiation was started was one and six-tenths months and continued for an average of six months' time.

Artificial Reconstruction of the Cotyloid Cavity in Congenital Dislocation of the Hip. Nove-Josserand. Lyon Chir. XXV, 353, May-June, 1928.

The author criticizes the ordinary procedures which are employed for reshaping the roof of the acetabulum, and for not sufficiently lowering this artificial cavity. He has proposed the following procedure, which consists of artificially reenforcing those structures which, normally, reconstruct the luxated hip after the reduction. He calls attention to the important role played by different parts in the process of the reconstruction of the hip after bloodless reduction. The cotyloid cavity of the child is not formed by bone but by cartilage, and at the age of seven years the bony structure is but a small, thin portion of the cavity; it is the fibro-cartilage which is the principal means of securing the solidity of the hip. After a reduction the stability is maintained at the first by the capsule, of which the superior portion is folded on itself and retracted. This retraction carries over the femoral head and the fibrocartilage, which is pressed upon by the exposed head and covers the surface of the newly formed cotyloid cavity. It exerts there a strong resistant action, which is the principal agent in maintaining the head in place. When the treatment is finished, the limb returns to its position easily and the child resumes walking. The bony cotyloid cavity is formed only much later, and is seen by the radiograph to develop after several months or even after several years. Often it remains incomplete without the function of the hip being interfered with, which proves the very important role which is given to the fibrocartilage in maintaining the stability of the hip.

But the fibrocartilage does not always return to its normal condition. Sometimes it remains adherent to the iliac bone and remains, therefore, exposed. In this, he thinks, lies the principal cause of the imperfect results. The object of these operations described by Nove-Josserand is to free the fibrocartilage, to lower it, and if need be to reenforce it by graft. In order to accomplish this, the hip is reduced and the limb held in flexion beyond a right angle. The region of the hip is

then exposed by Smith-Peterson incision. By this route the capsule is easily exposed. Then with a strong gouge the surface of the bone is reamed out at the level of the evident insertion of the capsule. This is detached above and below from the fibrocartilage, which covers the new cotyloid cavity as far as is possible to feel with the finger on the femoral head in the bottom of the wound. On retracting as strongly as possible the soft parts to the outside, a kind of deep sac of five or six centimeters in length is exposed, of which the internal wall is formed by the iliac bone which has been reamed out, and the external wall by the capsule and by the fibrocartilage. It is in this sac that the osteoperiosteal graft, previously taken from the tibia, is placed. Care must be taken to place this graft as horizontally as possible—this is to say, perpendicularly to the neck and to the projection of the bottom of the cavity. The wound is sutured and the hip is immobilized in abduction.

The operation is easy and brief. It does not expose the patient to shock, and immediate results are satisfactory. It remains, however, to see what may be the late results.

Approach of the Humerus by the Internal Route. A. Parcelier and A. Chenut. Rev. de Chir., XLVII, 454, 1928.

These authors report that the avenues of approach to the humerus described in the recent works of operative medicine are grouped into two, the antero-external and the posterior trans-tricipital routes. The first leads to the superior and middle third of the bone, and the second to the inferior third. They feel that these two routes of approach present a common inconvenience. In that of the middle and the inferior third of the bone, it is necessary to find eventually the radial nerve, which obstructs the operative field, to reflect and protect it; for the radial nerve, because of the numerous lateral branches which emerge at this level of the arm, is an organ relatively fixed, and its removal, even though carefully done, may be accompanied by a postoperative radial paralysis. They prefer, in order to reach the two inferior thirds of the humerus, the internal route. It would seem at first glance paradoxical to approach the humerous by the anterior portion, where there are the important groups of muscles and vessels, but on second glance it is noticed that the biceps is easily retracted, and with it the humeral artery and vein, by flexion of the forearm on the arm; that neither the median nor the cubital nerve branches at this level of the arm. They separate more and more as they leave the superior third of the arm. It is sufficient to recognize without retracting them.

The incision should be long, beginning at the axillary angle, immediately behind the inferior border of the pectoralis major, and following then the internal border of the biceps as far as the middle portion of the arm, where it then curves posteriorly to the epitrochlear, which it can easily reach. Having then reflected the superficial vessels and nerves, the incision is made to the biceps, this muscle being drawn to the outside and the mass of vessels and nerves freed at the level of the middle portion of the arm. This last is retracted to the outside, disclosing the intermuscular septum. Immediately behind this and throughout the length of the wound, the sheath of the tricepts is incised; the internal wall of the intermuscular septum, the humerus is reached. The bone can then be denuded behind and in front along two inferior thirds. Below it is easy to free the humerous as far as the epiphysis. This incision is not suitable for the upper third of the bone.The deep humeral vein crosses transversely the humerus at this level. The incision constitutes, therefore, the way of choice to treat the osteosynthesis or fractures of the two inferior thirds of the shaft of the humerus.

Postural Defects, Correctable in School Physical Education Classes. William Arthur Clark. California and West. Med., XXVIII, 636, May, 1928.

When large groups of children and young adults are examined, it is found that an appreciable percentage are abnormal in one or more aspects of body mechanics. Since this is a handicap, potential or real, such conditions should receive adequate treatment. However, the tendency in school to expect every child to conform to one type, should be guarded against.

A "vicious circle" in posture may be represented as follows: (1) slump in skeleton; (2) interference with organs; (3) poor function; (4) malnutrition and poor aeration; (5) depressed muscle tone which causes (1) slump in skeleton, etc.

Many cases of round shoulders have their origin in a tilted pelvis. When the pelvis is tilted forward, as a result of poor muscle tone around the hips and lower trunk, the consequent lordosis must be compensated by an exaggerated forward curve in the upper dorsal region which gives the rounded effect to the shoulders.

In evolving from the quadruped to the biped stage, the human skeleton seems to have a weak point remaining in the sacro-iliac joint. Perhaps in the distant future, further evolution may eliminate this joint and a solid bony union will preclude the now frequent trouble in this region.

In round shoulders, the most serious handicap is ptosis of the heart and diaphragm which are to a certain extent "hung" from the root of the neck. In growing children with a tendency to this deformity, it is best to have the clothing held by a belt at the waist rather than hung from the shoulders by straps. The condition can easily be treated in corrective physical education classes by well trained physical education teachers. Active muscle development should be the goal rather than passive bracing of the shoulders by apparatus.

Scoliosis cases, if not too severe, may be treated individually at school, provided the physical education department is properly supervised. The time-worn ideas regarding etiology of this deformity do not seem adequate in explaining it. It is suggested, with some evidence for support, that the lateral deviation may come from habits of sleeping—e. g., on the same side with pillow under the head and shoulder. Certainly there is more time spent in sleeping than in writing at a desk or carrying books.

In the discussion of this paper, the point is raised whether any attempt should be made by physical education teachers to do such work as outlined above. In answer to this it may be said that the majority of the defects are minor in degree and would not justify regular trips to the orthopaedic surgeon. The whole problem presupposes adequate orthopaedic supervision to differentiate the cases.

EYE, EAR, NOSE and THROAT

Edited by Jas. C. Braswell, M. D.
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Polvogt, L. M., and Crow, S. J.: J. A. M. A., Orangisms in Cultures from Tonsils and Adenoids, 1929, xcii, 962.

The authors report investigations undertaken to determine the predominating organisms deep in the tonsilar crypts, to discover whether organisms recovered from patients with a general systemic disorder differ from those recovered from patients with only local symptoms, and to investigate the carrier state.

In tonsils and adenoids of 91 to 100 patients, the haemolytic streptococcus was the predominating organism and in those of 9 patients the staphylococcus predominated. The streptococcus predominated in children, but in adults the staphylococcus was more common.

The authors state that a culture made by swabbing the surface of the tonsils is a reliable index of the organism predominating in the crypts.

The Physiology of Vestibular Nystagmus, Ivy, A. C.: Arch. Otolaryngol., 1929, ix, 123.

As a result of stimulation of the non-acoustic labyrinth, compensatory movements of the eyes occur. These consist in a slow movement called "deviation" and a quick movement in the opposite direction called "nystagmus." The deviation of the eyes is due entirely to stimulation of the labyrinth. The nystagmus is probably due to a reflex occurring by way of the muscle centers of the eyes and initiated by the stimulation of kinesthetic sensory nerve endings in the muscle of the eyes. The cerebrum maintains an inhibitory control of the reflex.

The author accepts the theory of Maxwell that the cristae of the ampullae are stimulated by changes in tension of the utricular membrane caused by inertia effects in the larger bodies of fluid in the vestibule and utriculus. He states that in man and the dog fish there is a correlation between the type of nystagmus that results from rotation in the various visual planes.

The Diagnostic and Therapeutic Value of Iodized Oil in Chronic Purulent Otitis Media and Chronic Mastoiditis, Mandelbaum, M. J.: Laryngoscope, 1929, XXXIX, 156.

Since it was proved that iodized oil will penetrate all of the mastoid cells and that the iodine exerts a beneficial effect on the diseased deep structures, the author has used iodized oil with considerable success in more than twenty cases of chronic otitis associated with subacute and chronic mastoiditis of varying degree or acute exacerbations of chronic mastoiditis.

He emphasizes that in acute mastoiditis and in chronic cases with acute exacerbations definitely indicating operative interference, the use of the oil is not to be considered.

In several cases with recurrent attacks of mastoid pain and discharge after mastoidectomy, the iodized oil revealed unremoved mastoid cells and brought temporary cessation of the pain and discharge.

Tumors Benign and Malignant of the Tonsil and Peritonsillar Area, Dunn, L. S.: Laryngoscope, 1929, xxxix, 16.

Dunn states that primary malignancy of the tonsil and peritonsillar area is not as uncommon as it was formerly believed to be. An early diagnosis is important. A tonsillar or peritonsillar mass should never be punctured when symptoms of tonsillar or peritonsillar infection are absent, and biopsy should never be done in what are believed to be bordering cases. Biopsy specimens should be removed with the cautery instead of the cold knife. When the laryngologist is unable to make a diagnosis he should consult a surgical pathologist. When the diagnosis then remains doubtful, he should refer the patient to a roentgenologist.

Circumcorneal Transplantation of the Buccal Mucous Membrane as a Curative Measure in Diseases of the Eye, Denig, R.: Arch. Ophth., 1929, i, 351.

The author recommends circumcorneal transplantation of mucous membrane from the mouth as a curative measure in such diseases of the eye as trachomatous pannus, scrofulous pannus, torpid and dystrophic keratitis and herpes. It has been used with gratifying results also in burns due to ammonia, lime or acid. The beneficial effect seems to be due to improvement in the nutrition of the cornea.

The diseased conjunctiva is removed, the sclera thoroughly cleaned off, and the mucous flap from the mouth then sutured in place. Both eyes are bandaged for five days and the sutures are removed after from ten to twelve days. The flap may be removed later.

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TUBERCULOSIS

Edited By
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The Epidemiology and Control of Tuberculosis. Eugene L. Opie. American Review of Tuberculosis, (August) 1929.

About sixty years ago it was demonstrated that tuberculosis is a transmissible disease and a few years later the tubercle bacillus was discovered. Upon these discoveries are based almost all the measures we are now using for the control of the disease. Dissemination of tubercle bacilli has been retarded by various measures to promote various forms of cleanliness. Segregation of patients with positive sputum has diminished the spread. Dispensaries for tuberculosis has been an effective means of discovering many cases.

In an attempt to control tuberculosis, we must concern ourselves not only with its transmission from the sick to the well but with the existence of widespread, concealed infections of varying grades of intensity, which in many instances under unfavorable conditions will become manifest disease. One hundred thousand persons die from tuberculosis in this country every year and approximately one million suffer from the disease.

Knowledge of the occurrence of tuberculous infection in the community and of the conditions that retard or favor its spread is the basis of all effective efforts to control the disease. Knowledge concerning the distribution and spread of disease

is obtained by direct observation and by statistical methods. Every community, rural or urban, should know how many of its members have open tuberculosis and are scattering tubercle bacilli; how many have manifest disease but no tubercle bacilli in the sputum; and how many children and adults have grave latent infections that threaten active disease and are a potential source of transmission.

The Treatment of Tuberculous Pericarditis with Effusion by Injection of Air and Lipiodol into the Pericardial Sac. W. Ackermann. American Review of Tuberculosis, (August) 1929.

Report of a case: The Patient, 48 years of age. was treated at first by private physicians for pleurisy. The symptoms enumerated show that the patient was quite ill. First paracentesis of pericardium with removal of 300 cubic centimeters of cloudy serofibrinous fluid gave some relief. The fluid was strongly positive for tubercle bacilli. After the third paracentesis with removal of 450 cubic centimeters of fluid, 50 cubic centimeters of air was injected into the pericardial sac by an artificial-pneumothorax apparatus. For the next few days the temperature dropped to normal. In all, the pericardium was tapped 20 times, 17 of which were followed by the injection of air, and one of them by the injection of 10 cubic centimeters of lipiodol and then air. Patient felt so well that he was permitted to be up after the twelfth treatment.

The author's conclusions are:

1. The performance of pneumo-pericardium is without danger and discomfort.

2. The injection of air gives greater relief than does aspiration of the exudate alone.

3. The presence of air delays the reformation of exudate.

4. By holding apart the two layers of the pericardium, the friction rub and formation of adhesions are prevented.

5. On X-ray examination, the air in the pericardium permits one to see how completely the exudate has been evacuated.

6. The injection of lipiodol sets up an irritation with elevation of temperature, and this seems to have a great effect in reducing the vitality and number of tubercle bacilli. After four months, no tubercle bacilli could be found in the exudate.

Histological Studies on Healed Tuberculous Primary Lesions of the Lung. R. H. Jaffe and S. A. Levison. American Review Tuberculosis, (August) 1929.

The healing of the tuberculous primary lesion consists of three phases: (1) the formation of a fibrous and hyaline capsule, (2) the calcification of the center, and (3) the partial or complete replacement of the center and parts of the capsule by bone. The latter phase does not always occur.

Fifty primary lesions were selected for this study. The authors found that the average of individuals with boney primary lesions is forty-six years as compared to thirty-three of the group with nonosseous primary lesions. The earliest primary lesion containing bone was found in a man aged twenty-one years; the oldest without bone was observed in a man sixty-three years of age. The figures indicate that with advancing age the frequency of ossification of the primary lesions advances, although age is not the only determining factor.

The authors' conclusion is as follows: the tendency of the tuberculous primary lesion of the lung to become replaced by bone is explained on the basis of an irritating action of the calcified center upon the specific capsule. This irritating action leads to an ingrowth of granulation tissue, which, bathed with tissue fluids oversaturated with calcium salts, undergoes osseous metaplasia which is characteristic of the primary lesion and is perhaps due to its peculiar histogenesis. It is seldom observed in the calcified and encapsulated tubercles of the regional lymph nodes and of the reinfections.

DERMATOLOGY, X-RAY AND RADIUM THERAPY

Edited by C. P. Bondurant, M.D.
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The Hereditary Factor in Allergic Diseases with Special Reference to the General Health and Mental Activity of Allergic Patients. R. M. Balyeat, Am. J. M. Sc., 176:332, Sept., 1928.

It was found in this study that heredity apparently was the chief factor in determining the development of an allergic state, and to some extent governed the time in life when symptoms would appear. The greater the amount of exposure, the greater would be the patient's liability to allergy; the earlier the sensitivity developed, the greater would be the possibility of the patient becoming sensitized to more than one protein group. Patients may be sensitive to nitrogenous or non-nitrogenous substances which may also be found in breast milk and cow's milk. Children may be born specifically sensitive, but only the ability to become sensitive is transmitted, not the specific state. Eczema and migraine were found to be interchangeable with hay-fever and asthma, but an increased resistance to other infections was observed in these allergic persons.

Leprosy in the United States. Ralph Hopkins and Oswald E. Denney. J. A. M. A. 92:191, (Jan. 19) 1929.

In what is now the National Leprosarium a statistical study was made of 718 cases treated in the past thirty-four years. Some 500 of these paients were natives, though just what proportion of these had foreign born parents is not known. Males predominated over females in a proportion of more than 2 to 1, and there were twice as many whites as negroes. The social status of the patients represented a cross section of the normal populace. 40 percent of the cases were of the skin type, 11 percent of the nerve type and the remainder of the mixed variety. An astonishingly large number of the cases were closely related by blood. A few families were affected almost to complete extinction. The disease appeared to manifest itself at all ages about equally, though there was a slight increase at the age of puberty. In five of the cases, the incubation period was calculated to be not less than 6 years—the duration of leprosy approximately 14 years. Since the rigid rules for parole have been in effect, and with better institutional facilities, relapses in discharged patients have been uncommon, and the mortality rate has been definitely decreased.

New Method of Treatment of Pruritus Senilis. J Borak. Strahlentherapie; 29:245 (June 30) 1928.

This author regards pruritus senilis as a dis-

turbance of metabolism. It is his opinion that the end-products of the bodies' utilization of proteins accumulates in the tissues and sensitize the nerve endings, which in turn gives rise to the sensation of itching. The process is of the same nature as the skin symptoms in diabetes. He advised the irradiation of the hypophysis and the thyroid. Of ten patients so treated, after all other treatment had failed to give relief, eight gained relief within a week and have remained cured for a period of two and one-half years. Two patients with general pruritus were likewise relieved. In case of localized pruritus—vulval, facial, anal and back—the treatment is of no use, as these patients must be subjected to local treatment.

Treatment of Furuncle and Carbuncle. Heddaeus, Munchen. med. Wchnschr. 75:2052 (Nov. 30) 1928.

Heddaeus asserts that furunculosis is not caused by a bad state of the blood. It is always caused by outward conditions and usually begins in an infected hair follicle. Though some persons, diabetic patients, for instance, are more subject to this kind of infection, the immediate cause is external. He points out to prove this statement that if a patient with an isolated furuncle is properly treated, the infection does not spread. In recent years, he has employed artificial light therapy with great success in the treatment of large carbuncles. After this treatment has been applied for several days a pull on the overlying skin will permit a free escape of the pus. Later the necrotic tissues can be extracted by means of small forceps. The advantage of this method over the older methods of excision is that the resulting scar is hardly noticeable and the pains diminish after the first irradiation. Heddaeus recommends this method also for the treatment of furuncles, especially those in the axilla and on the lips.

Results of Roentgen Ray Treatment of Malignant Tumors. W. Schmidt, Strahlentherapie, 30-197. (Oct. 5) 1928.

This report is formed from the results of high voltage treatment in the Gottingen University clinic between 1919 and 1927. His first conclusion is that for operable tumors it cannot compete successfully with surgery. He considers carcinomas of the skin an exception; when it is multiple or when the age or the cosmetic result is of sufficient importance to be considered, radiation is to be considered. If the superficial cancer of the skin proves refractory to X-ray, radical cancer surgery should be considered at once. Post-operative irradiation has improved the results in cancer of the breast. It should also be given in all cases where the operation was not radical and in all cases of sarcoma of the trunk. In all inoperable tumors except in those with extreme cachexia irradiation is worth the effort of trying. In certain tumors of the gastro-intestinal track it is found of use. He has found it useless in oesophageal carcinoma. The lymph node or bone metastase are much more resistant to roentgen ray than local recurrences. For the relief of pain in bone metastase it is of some use.

THE TETRALOGY OF FALLOT

Paul D. White and Howard B. Sprague, Boston (Journal A. M. A., March 9, 1929), report the case of a notable musician, Henry F. Gilbert, who for nearly sixty years of his life suffered from congenital heart disease with cyanosis and clubbing of the fingers. The case is of great interest, first, because with the tetralogy of Fallot (pulmonic or infundibular stenosis, interventricular septal defect, dextroposition of the aorta and hypertrophied right ventricle) he survived to his sixtieth year, surpassing in age all patients previously reported by more than twenty-three years, and secondly, and most significant, because he made his crippled life a great success, establishing himself in his musical profession as one of the greatest of American composers, and as a pioneer of native American music. The diagnosis of the cardiac defects was correctly made a year before his death. Fallot has demonstrated that this was possible forty years ago.

Report of Examination for Licenses to Practice Medicine

Oklahoma State Board of Medical Examiners, Oklahoma City, Oklahoma,

September 10-11, 1929.

Name	Year of Birth	Place of Birth	School of Graduation	Year of Graduation	Home Address or Previous Location
Dale, Charles Dorsey	1879	Mississippi	Memphis Hos. Med. Col.	1904	Atoka, Okla.
Benjegerdes, Theodore D.		Manly, Iowa.	University of Iowa	1925	Beaver, Okla.
Branley, Bernard Lincoln	1900	Melrose, Minn.	University of Minnesota	1927	Tulsa, Okla.
Chandler, Edwin Allen	1901	Hubbard, Texas	Baylor University	1928	Ponca City, Okla.
Davis, Stella Kukuraisitis	1904	Chicago, Ill.	Rush Medical College	1927	Arnett, Okla.
Denny, E. Rankin	1901	Plainville, Ind.	University of Indiana	1925	Tulsa, Okla.
French, DeKoven A.	1902	Sedalia, Mo.	Howard Medical	1928	Boley, Okla.
Hargett, Mason Victor	1904	Iowa	Northwestern	1929	Yale, Okla.
Hartman, William Vernon	1882	Missouri	Tulane Medical	1912	Tulsa, Okla.
McClure, Harold McKinley	1903	Corinth, Ark.	Northwestern	1929	Chickasha, Okla.
McGrew, Edwin Allen	1898	Iowa	University of Iowa	1924	Halstead, Kansas
Rountree, Charles Ross	1898	Springfield, Mo.	Washington University	1924	Oklahoma City
Whittlesey, Frederick R.		Shanghai, China	Western Reserve	1925	Tulsa, Okla.
Wilson, Herbert Alexander	1895	Wister, Okla.	Arkansas Med. College	1929	Wister, Okla.
Dillard, James Albert	1884	Melbourne, Ark.	University of Arkansas	1910	Cashion, Okla.
Causey, George Albert	1873	Wichita, Kansas	Memphis Hospital	1900	Swifton, Ark.
Backus, Otto August	1904	Marshfield, Wis.	University of Wisconsin	1929	Tulsa, Okla.
Craden, Paul Joseph	1901	St. Louis, Mo.	Northwestern	1928	El Reno, Okla.
Hinckley, Robert George	1904	Milwaukee, Wis.	University of Wisconsin	1929	Tulsa, Okla.
McQuaker, Mary	1898	Scotland	University of Glasgow	1922	Tulsa, Okla.
Schriber, Paul W.	1904	Glenwood, Wis.	University of Wisconsin	1929	Tulsa, Okla.

PREVENTIVE MEDICINE AS APPLIED TO TUBERCULOUS PATIENTS

The National Tuberculosis Association has procured histories of 1,499 white patients prior to their first admission to a sanatorium. All were at least 15 years of age and all were diagnosed as having pulmonary tuberculosis at the time they entered. The histories, taken by physicians associated with the institutions, were obtained in considerable detail. In addition to questions regarding matters of direct concern to the patient, a few were asked which had a bearing on the welfare of those with whom the patient had come in contact. Tuberculosis is a communicable disease. It follows that the best way to reduce the incidence of the disease is to prevent the bacillus from reaching a second host. Linsly R. Williams and Alice M. Hill, New York (Journal A. M. A., March 9, 1929), state that four questions directly relating to the spread of infection were asked each patient in order to learn something of the extent to which members of the medical profession are practicing preventive medicine so far as tuberculosis is concerned. It was illuminating to find that, though 1,496 of these 1,499 patients had consulted anywhere from one to fourteen physicians each, 625, or 42 per cent, had never been told by any physician how to dispose of the sputum. Of the 871 patients given this instruction, 677 first received it from the physician who first told the patient that his illness was tuberculosis; 107 from the physician immediately following the first, and twenty-four others by physicians still further removed from the one first telling the diagnosis to the patient. A still smaller number of patients were told by any physician that they should keep their dishes apart from those used by other members of their households and that their dishes should be washed separately. Approximately 47 per cent of the patients failed to receive instruction regarding these matters prior to their admission to the sanatorium. The advice to sleep alone was given to 63 per cent of all patients by some physician, more receiving instruction on this particular point than on any other preventive measure. However, only 61 per cent were advised as to other sleeping arrangements. The question as to other sleeping arrangements comes under the heading of cure rather than prevention, but the answers to it have a bearing on the answers to the question of sleeping alone. Taken together, they indicate that the thought of preventing infection was not always in the physician's mind when he advised his patient to sleep by himself, for 11 per cent of the 945 patients who were told to sleep alone and 12 per cent of the 919 given advice as to other sleeping arrangements were so instructed by a physician seen prior to the one who told the patient that he had tuberculosis. Except as an aid to cure, the early instruction as to sleeping seems unexplainable especially in view of the fact that the corresponding percentages for those instructed regarding disposal of sputum, use of separate dishes and washing dishes separately were six, seven and seven, respectively. A fact which calls for comment is that proportionately fewer patients who were able to have care in a private sanatorium had received instruction from their physicians prior to admission than those admitted to public sanatoriums. This was the case with respect to each one of the items noted. When the group was considered as a whole, it was evident that, the further advanced the disease at the time of the patient's first admission to a sanatorium, the more apt he was to have received instructions previously respecting the several preventive measures. But, except in regard to sputum disposal, no such correlation existed in the case of the men or the women when considered alone. Each of the 1,499 patients from whom histories were obtained in this study was asked whether printed instructions had been given by any physician consulted. No attempt was made to go into the detail of such instructions. Seventeen per cent replied in the affirmative, the women to an extent between one-fourth and one-fifth greater than the men, and the women with moderately advanced tuberculosis to a much greater extent than any of the others. The best record on this score was shown by a group of patients reported on by one county sanatorium, 45 per cent of whom had received printed instructions from some physician prior to their admission. The histories in this group reveal that instruction of tuberculous patients by their physicians in precautionary measures is not especially related either to the stage of the disease on admission or to the sex of the patient. Rather, the proportion of patients instructed with the communities served by the sanatoriums and the extent to which their interest in preventive medicine has been aroused. By far, too large a number of physicians gave none of the instructions asked about. Some who did stressed one point to the exclusion of others, some another. In view of the fact that the average physician sees only a few cases of active tuberculosis in the course of a year, he cannot be expected always to be a perfect instrument for the dissemination of advice to the patient; but this study would indicate that in the medical profession as a whole insufficient thought is being given to preventive medicine. One fact is evident: The saturation point has not yet been reached in the need for stressing prevention.

TRICHINOSIS

Henry F. Stoll, Hartford, Conn. (Journal A. M. A., March 9, 1929), reports on three cases of trichinosis. He asserts that two of the cases presented diplopia and one polyserositis. It would seem that the history of severe pains in the legs, and the presence of an eosinophilia in the blood and pleural effusion together with the strong precipitation test, establishes the diagnosis of trichiniasis with reasonable certainty, even though trichinae are not obtained in the muscle excised. The finding of 85 per cent of eosinophils in the pleural fluid would favor trichiniasis, even though trichinae were not found. If the patient is seen very early, the diagnosis may be made by finding the trichinae in the blood or by stool examination. Eosinophilia is not present at this time. It is believed that the toxic symptoms are due to the absorption of the large amount of destroyed muscle that results from the invasion of trichinae rather than from the parasite itself.

PROPHYLAXIS AND EARLY TREATMENT OF PNEUMONIA

The prospects for success in the treatment of any disease are admittedly greater, the earlier the patient presents himself for medical attention. This is particularly true in pneumonia.

Many physicians carry a bottle of Optochin Base tablets with them during the winter months, so as to be prepared to institute treatment at the time of diagnosis. They do not wait for definite pneumonia symptoms to appear but prescribe Optochin Base prophylatically in all threatening cases. Cross writes, "The prompt use of Optochin Base in suspected pneumonia should in our opinion be a routine procedure, not delaying its administration for signs of definite consolidation. Chill, temperature elevation, respiratory symptoms, and diffuse or limited moist rales are to be considered indications for this drug."

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